

Food Intolerances

What are they, how are they diagnosed,
and how do I manage them?



OMED[®]
HEALTH

TABLE OF CONTENTS

01

Introduction _____ 1

02

Symptoms & Causes _____ 6

03

Diagnosis _____ 13

04

Treatments _____ 21

05

About Us _____ 29

Introduction

What are food intolerances & food allergies?



OMED[®]
HEALTH

Introduction

In recent years, there has been increased awareness about what we are eating and how it can affect our well-being. This may in part be due to the rising incidence of gastrointestinal (GI) diseases worldwide, including inflammatory bowel disease (IBD), irritable bowel syndrome (IBS), small intestinal bacterial overgrowth (SIBO), and colonic dysbiosis (1). Combined, these conditions are currently estimated to affect over a billion people worldwide (2) and are characterized by shared non-specific symptoms that can range from mild to severe and often vary over time. In the US alone, GI diseases are estimated to cost over \$21 billion per year, including healthcare costs and lost productivity due to illness.

A diagnosis of a GI condition is usually made after a lengthy process of tests; however, it is common to experience chronic digestive issues that appear to have no clear causes. This is often given the diagnosis of IBS, and at least some of the causes and triggers of uncomfortable symptoms are known and can be managed. As high as 12% of the



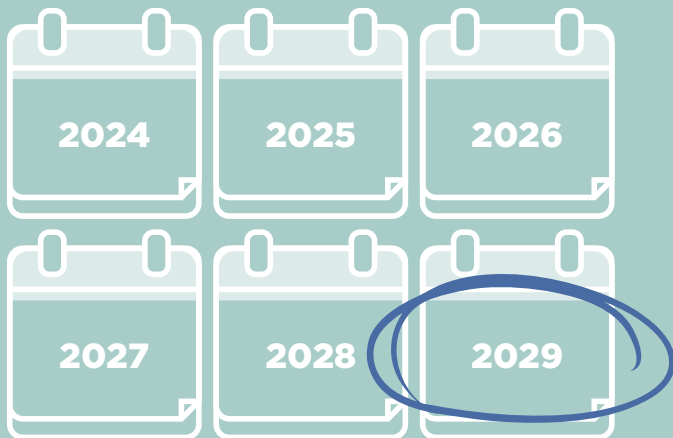
population in the UK have IBS, and such people can be left without clear guidance or treatment, especially if the triggers are complex (3). This leaves many people feeling frustrated and alone to manage as best as they can, and many turn to fad cures and may progressively restrict their diet over time out of desperation to lessen some of the symptoms. Our diet could hold the key to identifying the underlying causes of some of the digestive health concerns experienced by the population, as many people could have undiagnosed food intolerances and other underlying conditions that can be treated, monitored, and managed to restore health and wellness.



Our diets have changed rapidly over the last few decades, most notably with an increase in additives, preservatives, and sweeteners – one study conducted in the USA found that between 2001 and 2019, the proportion of food products that contain additives increased from 49.6% to 59.5% (4).

Chronic digestive health symptoms

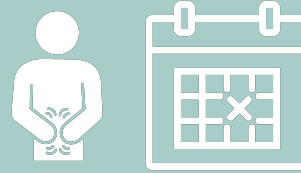
It can take on average **6.5 years** to get a diagnosis through the NHS



6 in 10 sufferers have never sought professional help



Digestive health issues are one of the most common causes of **Work absenteeism**



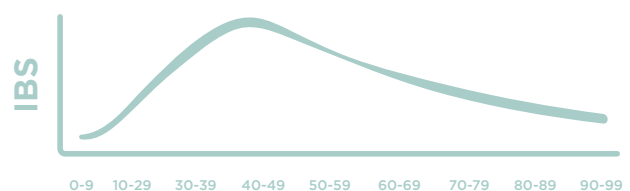
IBS is twice as common in women as in men



As many as **1 in 8 people** have gut health symptoms at any one time

Approximately **20 to 40%** of all visits to gastroenterologists are due to chronic digestive health symptoms.

People younger than age 50 are more likely to develop IBS



These stats are all estimates

This shift may be having unpredictable effects on our digestion. Data from the UK suggests that despite some positive trends in our diets, including eating less red meat, and less sugar, in particular sugary drinks overall (5), **in many ways our diets are getting worse**. It is well known that fiber in foods such as vegetables, whole grains, legumes, and nuts can promote the growth of many beneficial gut bacteria that help to support digestive health, however, average intakes of fiber in the UK are still significantly below the recommended daily amount. Most people are still not eating five portions of fresh fruit and vegetables a day, which we also know can support digestive health. Although these factors are thought to improve overall gut health, symptoms of digestive health problems like bloating, nausea, and abdominal pain can show up even with the healthiest of diets, and in the absence of a serious gastrointestinal disease, **may point towards an underlying food intolerance that is not being addressed**.

Food intolerances are thought to be common, and despite not being life-threatening, they can significantly affect quality of life through their uncomfortable, and often embarrassing symptoms. Despite being common, there is still much that is not known about the mechanism of food intolerances, and how many intolerances there are. However, once a food intolerance has been confidently identified, they can be easier to manage – simply reducing or removing the food you are intolerant to, should significantly improve the symptoms experienced. **It is important to distinguish between food intolerances and allergies**. Food allergies can be life-threatening and are also thought to be increasing in prevalence with up to 2% of adults, and just under 10% of all children affected, particularly in western parts of the world. The rising incidence of allergies is also thought to be due to changing diets and other environmental factors such as exposure to pathogens during childhood.



Myth: if you are intolerant, you need to avoid that food forever.

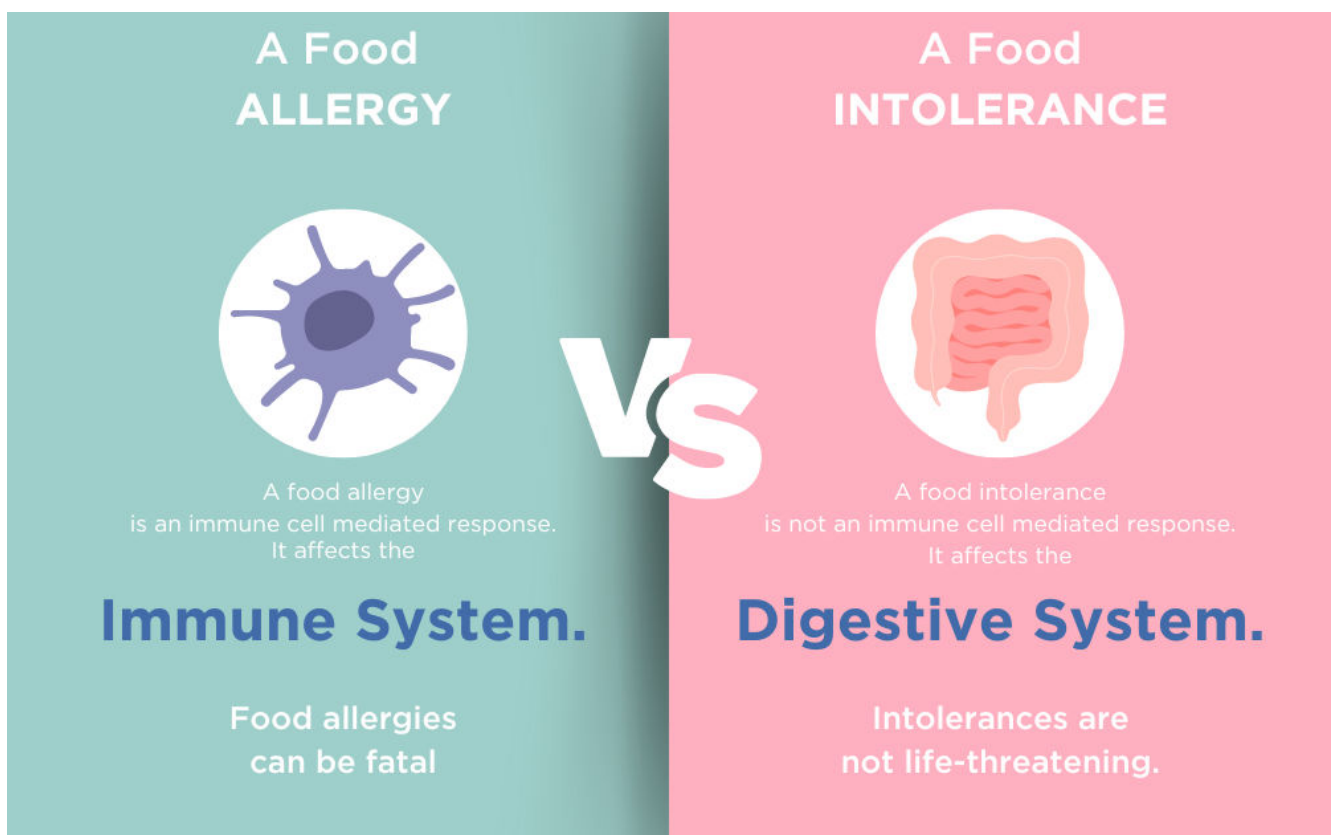
Fact: you should not cut out entire food groups without speaking with a healthcare professional as just a reduction in what you are eating can sometimes alleviate symptoms.

In this eBook, we will first cover what food intolerances, allergies, and sensitivities are, and how these differ. Then we will focus on food intolerances specifically, giving an overview of their symptoms and underlying causes. Then we will move onto what tests are available that can diagnose them versus food allergies, and how food intolerances can be managed to achieve better gut health.

Food intolerances

Food intolerances are abnormal reactions following the ingestion of food. These are non-immunological responses and affect up to 20% of the world's population (3). Even though they are thought to be so common, the diagnosis is often not straightforward due to the complicated symptoms that overlap with so many other gastrointestinal diseases, and the often-delayed response – some people can experience symptoms several days after they have ingested the food they are intolerant to. The most common cause of food intolerance is the lack of an enzyme needed to break down and digest the food or ingredient (3), and such is the case with lactose intolerance in response to eating foods such as milk, and yoghurt.

There are a few ways to diagnose a food intolerance, depending on which intolerance is suspected – mostly this involves the use of an elimination diet, whereby the food is removed from the diet in the short term (usually between two to four weeks), before being reintroduced gradually to monitor your body's response. Breath tests can also be used to monitor the response of the gut microbiome to food which may be causing symptoms. Food intolerances are different from allergies in several ways: people with intolerances may be able to handle ingesting a little bit of the food they are intolerant to without symptoms, whereas for those with allergies, even a microscopic amount can be enough to cause allergic reactions (6).



There are common types of food that cause intolerances, such as food high in FODMAPs, that have been extensively studied in conditions such as IBS. How food intolerances are diagnosed and treated will be discussed in more detail later in this eBook, but essentially there is a systematic approach that can be used to identify which aspects of the diet may be causing the

digestive symptoms, and treatment is usually simple – the reduction, or removal of the food that is causing the intolerance from the diet.

Food allergies

Food allergies are caused by an immune response being inappropriately activated against harmless foods that are ingested, or items applied topically to the skin. Common food allergies are to nuts, milk, and eggs, however, allergies exist to all sorts of things like medicines and bug bites. The most important concept to remember is that an allergy is caused by the immune system reacting to compound(s) present in harmless substances it comes into contact with. Food allergies can either be facilitated by a component of the immune system known as IgE antibodies, which cause an almost immediate immune response to the food, or non-IgE mechanisms which cause a more delayed immune response that can take several hours to develop (7). The symptoms caused by an allergy include itching, rash, swelling of the face, lips, and tongue, swelling of the throat and airways, causing breathing difficulties, dizziness and fainting, and a fast irregular pulse.

Allergies can be diagnosed using a skin prick test, whereby a small amount of the suspected allergen is scratched onto the skin to see whether it reacts, blood tests that check for allergens, or use of a special diet where you avoid the allergen and monitor whether symptoms improve. The management of an allergy includes avoidance of the thing you're allergic to, and medicines for mild allergic reactions like antihistamines, steroid tablets, and steroid creams. Sometimes in severe cases, it is recommended that the person has emergency medicines called adrenaline auto-injectors (an EpiPen) in case of an allergic reaction. It is sometimes possible that desensitization is tried for severe allergic reactions. This process involves carefully exposing the person to what they are allergic to over time, getting their body used to the allergen, and toning down the reaction. This should only be conducted under the strict guidance of an allergist/immunologist, as severe allergic reactions can be life-threatening.

Food sensitivity

It is possible to experience symptoms that are not related to food intolerances, food allergies, or other digestive conditions like celiac disease. This can be referred to as a food sensitivity, or more specifically, a non-type I hypersensitivity reaction (a type I hypersensitivity is more commonly known as an allergy) (8). It is not clear what the mechanism of a food sensitivity is, although it is suspected that the immune system is involved, causing symptoms like headaches, migraines, joint ache, and brain fog. Interestingly, people with IBS are significantly more likely to experience food sensitivity (9–12).

In the next portion of this eBook, we will go over the symptoms and causes of food intolerances.

Symptoms & Causes

What foods can you be intolerant to, and why?



OMED[®]
HEALTH



Symptoms of a food intolerance

● — Bloating

● — Abdominal pain

● — Excess gas

● — Constipation

● — Diarrhea

● — Headaches

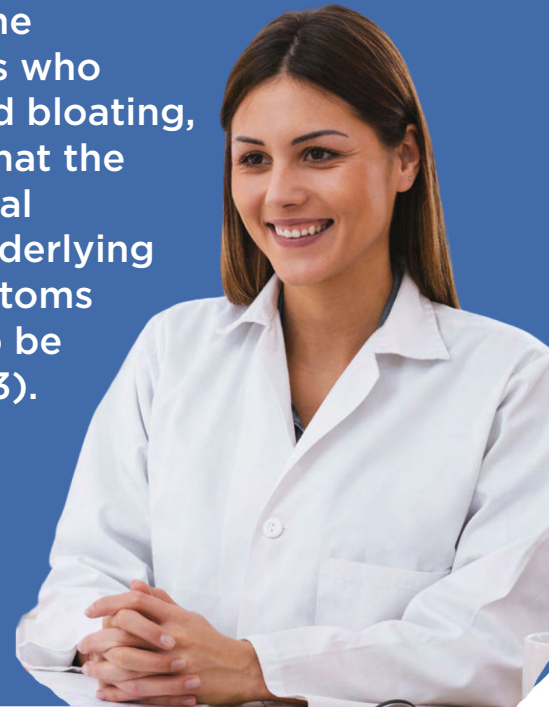
● — Tiredness

● — Nausea

Bloating

Bloating is one of the most common symptoms of all gastrointestinal conditions including food intolerances and IBS, and there are two related, but different phenomena involved in the experience of bloating. This includes the feeling of being full of gas, higher pressure (referred to as bloating), and abdominal distension, which refers to the actual increase in the size of the abdomen. Although these often are experienced together, it is possible to experience only one at a time. The most obvious potential cause, which seems to relate to how the sensation feels, is the presence of excess gas

One study indicated that abdominal distension only occurred in 48% of the participants who experienced bloating, reflecting that the physiological changes underlying these symptoms are likely to be different (13).



in the digestive system. This can occur in food intolerance due to the response of the community of microbes that normally live in the gut (known as the gut microbiome) to the food you are intolerant to. However, there is thought to be more to bloating and distension than just excess gas, including altered perception of normal digestion, and different reflexes surrounding the muscles involved in digestion.

Current blood tests cannot reliably diagnose a food intolerance.

Isn't there a blood test to diagnose a food intolerance?



OMED[®]
HEALTH

Excess gas

With bloating and flatulence being some of the more embarrassing, and often most uncomfortable symptoms of digestive health problems, most patients will be familiar with excess gas in the digestive system causing problems. **But what causes gas to build up?** There are two major causes of excess gas in the intestines, either swallowing too much air (usually whilst eating), or it can be produced by the microbiome that live in our intestines in response to the food we eat. Our microbiome plays a role in normal

digestion but can sometimes produce excess gas if it gets disrupted from a normal balanced state (known as dysbiosis), is present in larger than normal amounts too high up in the intestines (small intestinal bacterial overgrowth – SIBO) or has access to a higher level of carbohydrates than usual, which commonly occurs when food is not optimally digested. Gases associated with the activity of gut microbes include hydrogen, methane, and hydrogen sulfide.

Diarrhea

Diarrhea is caused by the intestines either absorbing less water from the transit of food, or increased water secretion, causing a more watery stool. This can occur in response to an infection (such as food poisoning), a disruption to the microbiome, or ingestion of a food that you are intolerant to. As with lactose intolerance, the presence of undigested lactose in the intestinal tract can affect the balance of water leading to diarrhea, and when lactose is fermented by the microbiome in the colon, this leads to gas production. This increased water can also cause abdominal distension, the sensation of bloating, and abdominal pain.

Tiredness

When the food you eat isn't being absorbed properly, you can't get the nutrients needed for your body to function optimally. This can lead to nutrient deficiencies that can leave you feeling tired or fatigued. Changes to bowel movements such as diarrhea caused by a food intolerance can lead to dehydration which can also leave you feeling tired.

Abdominal pain

Abdominal pain can be caused by two major things: actual pain caused by other symptoms such as constipation, diarrhea, excess gas, distention, but also something known as visceral hypersensitivity. This means that your threshold for experiencing pain is lower than normal, and you can feel pain even with normal functions such as digestion. This is common to experience if you have a condition such as IBS or a food intolerance, and although it is unknown what exactly causes this, it is thought to be related to microbiome changes, and changes to the communication between the brain and the gut, known as the “gut-brain axis”.

Constipation

Constipation is defined by having infrequent bowel movements (less than three times a week), passing hard, pellet-like stool, and having the feeling of incomplete bowel movements. Often this is accompanied by abdominal pain and feeling bloated or nauseous. There are many causes of constipation: the most common include the intestinal tract moving slower than usual, and stool building up and becoming drier – which is more difficult to pass. When you are having difficulty digesting your food due to an intolerance, this can upset the balance of the system and result in constipation.

Headaches

Headaches are also noted as possible symptoms of a food intolerance. The brain itself doesn't have pain receptors, and so despite feeling like it, a headache is typically the result of pain originating elsewhere in the head, such as the muscles in the face, scalp, or neck. It is unclear exactly why headaches are common to experience if you have a food intolerance.

Nausea

The sensation of nausea is common, and the underlying causes are complex. The purpose of nausea is to warn about the ingestion of something toxic and can trigger vomiting to remove a toxic substance from the body. This can be triggered by underlying signals that originate from pathogens, however, nausea can also be triggered by things unrelated to potential toxic ingestion, like emotional state (i.e. stress and anxiety), and motion sickness. Nausea is common in response to any problems occurring during digestion, and so can be caused by a food intolerance.

We can help you to take control of your gut health!

At-home tests



Device and App



Expert support



Join the waitlist now for first access to the OMED Health Breath Analyzer device and App, or purchase a kit to start your digestive health journey today!

OMED
HEALTH

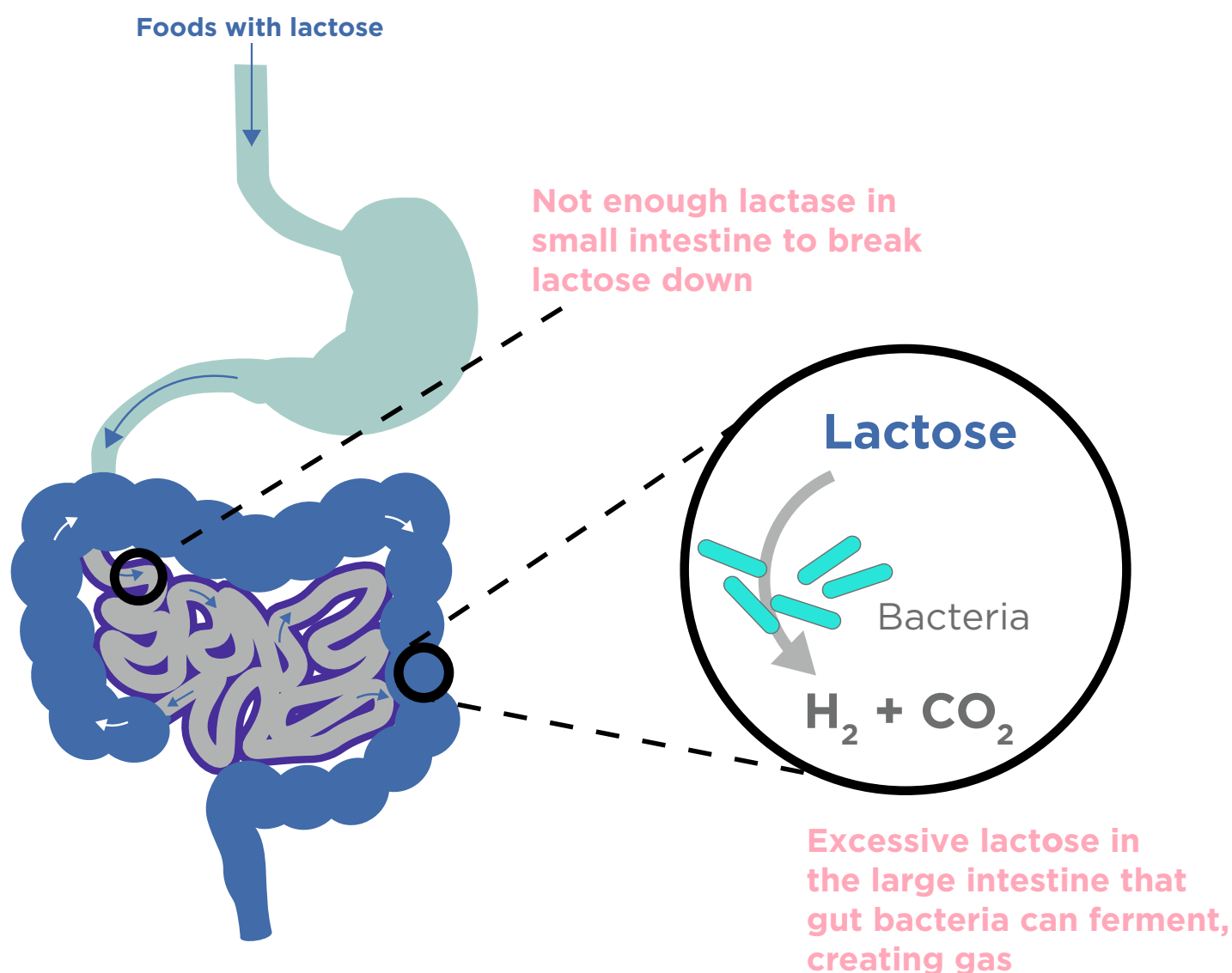
Despite being so common and experienced by all of us at some point in our lives, **all of these symptoms can also indicate more serious underlying gastrointestinal conditions.** These include inflammatory bowel disease, Coeliac disease, or even cancer – especially if they are present long term, come on unexpectedly, or appear to be getting worse. It is very important that if you have been suffering from any of these symptoms for a longer period of time, you seek advice from your healthcare provider. They will be able to help in ruling out more serious conditions. It is also possible that some people can have multiple disorders that can cause each other and make the symptoms worse in a feedback loop. For example, someone with IBS may also have an underlying intolerance that is causing the symptoms, or IBS could be making the intolerance worse than usual during a flare up.

Different types of food intolerances

Although it is supposed that you can be intolerant to a range of different foods, there are a few common, and more established food intolerances that will be discussed in this section.

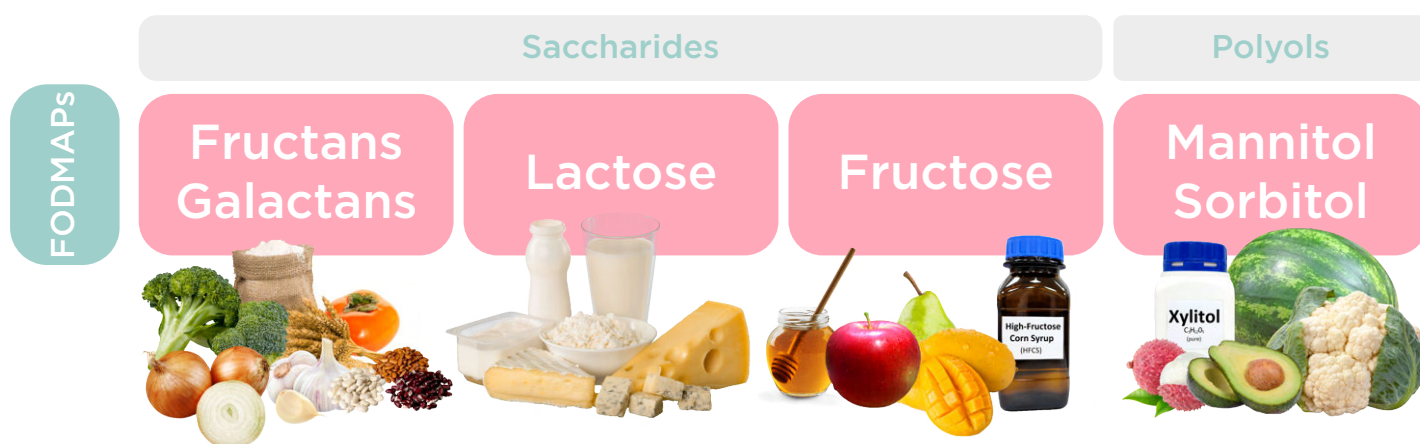
Lactose intolerance

Lactose intolerance is the most common food intolerance. In fact, having lactose intolerance is more common than not having it – across the global population, 68% are lactose intolerant, although this varies significantly by geographical location (14). Lactose intolerance is caused by a shortage of the enzyme lactase which is required to break down lactose in the body. When ingested, lactose is normally broken down into the sugars glucose and galactose by the enzyme lactase. Without a sufficient amount of the enzyme lactase, this causes lactose to be present in large amount in the digestive system. The microbiome can then feed on lactose and produce an excess amount of gases like hydrogen, and other compounds that can be irritating to the intestinal tract, causing the symptoms experienced.



FODMAPs

Fermentable oligo- di- mono-saccharides and polyols (FODMAPs) are a group of readily fermentable carbohydrates present in a variety of different foods, and were initially identified as being capable of triggering symptoms in patients with IBS. The paired “low FODMAP” diet has been incorporated into routine clinical advice for those with IBS, and seems to present a group of foods that commonly cause gastrointestinal symptoms. As well as being rapidly fermentable, FODMAPs are also generally poorly absorbed, and have been shown to increase water delivery into the intestines (15), which could be responsible for the symptoms. Certain people, such as those with IBS, seem to be particularly sensitive to FODMAPs, and so could be considered intolerant to them.



Fructose intolerance

Fructose is a FODMAP (as is lactose), but it is also possible to be intolerant specifically to fructose. There are two forms of fructose intolerance, one is hereditary (HFI) that is usually diagnosed in infants due to its severe symptoms. HFI causes an inability to metabolize fructose which can lead to organ damage long-term. The second form is non-hereditary fructose intolerance and is characterized by insufficient absorption of fructose by the intestines. Similar to lactose intolerance, this leaves a significant amount of fructose to pass through the digestive system, and is readily fermented by bacteria, producing gas, and uncomfortable symptoms.

Now that we have covered what symptoms occur with a food intolerance and some examples of what foods you can be intolerant to, the next section of this eBook will focus on how a food intolerance is diagnosed, what tests are, and are not recommended, and a comparison of the test for food intolerances to food allergies.

Diagnosis

Tests available to diagnose a food intolerance

OMED[®]
HEALTH

If you suspect you have a food intolerance or food allergy, it is really important that you first contact your doctor. They'll rule out more serious conditions that can mimic food intolerance symptoms such as inflammatory bowel disease, and Celiac disease. Also, without a doctor's advice, you may struggle to correctly identify the foods that are causing your problems. In this section, we will outline the different methods that may be used to diagnose a food intolerance and compare these with a food allergy.

Many commercially available tests claim to be able to diagnose a food intolerance and yet have little to no scientific evidence behind their use. This can be confusing when searching online for potential causes for chronic digestive health problems, so we will also outline which tests are used routinely in the clinic by doctors to diagnose an intolerance, and which are not recommended due to lack of efficacy and reliability.



Myth: IBS is always caused by a food intolerance.

Fact: Not all IBS is caused by a food intolerance, and food doesn't always trigger IBS symptoms, sometimes it can be environmental triggers such as stress. You can have both IBS, and a food intolerance!

Basing diet changes on strong evidence that is scientifically based is of utmost importance to improve your gut health symptoms. Tests that have good scientific evidence behind their use mean that they are based on reliable information that has been generated by laboratory experiments, data, and/or observations from real-world settings in a controlled manner.

This means that there is evidence to show that these tests can be used to diagnose a food intolerance, and that therefore symptoms can improve if you reduce or remove the foods identified with these tests. It does not guarantee that the results are always right – as everyone's body is different, and there is a margin of error with any clinical test. However, alongside your symptoms, and guidance from a health professional, these tests can be used confidently to assess what could be causing your gut health problems. The tests available that have good scientific evidence behind them for food intolerances are:

The tests available that have good scientific evidence behind them for food intolerances are **dietary tests and breath tests.**



Food diary

Elimination diet



Dietary test

There are two sides to dietary tests for food intolerance. This includes the use of an elimination diet, or an oral food challenge, usually in combination with each other. During an elimination diet, the food that is suspected to be causing an intolerance is removed from the diet for a short period of time such as two to four weeks. Using a food diary first to work out which foods are connected to when you experience symptoms can help to narrow down which foods might be the cause, and so is a useful place to start. An elimination diet cannot distinguish between a food allergy and a food intolerance, and it is important to seek the advice of a medical provider before attempting a change to your diet to identify potential causes of your symptoms.

During an elimination diet, your doctor may advise you to eliminate only one suspect food at a time, or multiple foods at the start, which are re-introduced in a step-wise fashion. This way, if you notice your symptoms improving you can pinpoint which specific food might be causing the issue. If you cut out multiple foods at once and see improvement, it is hard to figure out which one you may be intolerant to, which could lead to avoiding many foods unnecessarily.

To confirm a food intolerance, a food challenge can be performed. When a more serious allergy has been ruled out, the gold-standard test for a food intolerance is to exclude the food from the diet and see whether symptoms are less frequent or disappear, then, using a challenge to reintroduce the food into the diet and see whether symptoms come back. This strongly suggests the patient has an intolerance to that food.

Breath tests

Like other samples that can be taken from the body, such as blood and urine for medical tests, the composition of exhaled breath can tell us about our health. Certain compounds in the breath originate from the underlying processes that are thought to cause intolerances, crucially those in the gut microbiome. As an example, during carbohydrate malabsorption, when carbohydrates are not broken down and absorbed properly, they can act as a fuel for your gut bacteria which readily feed on them. This produces hydrogen, methane, and carbon dioxide gases in the process, resulting in bloating, abdominal pain, and flatulence (16). Hydrogen and methane can be detected in the breath, and their levels can be used to diagnose a carbohydrate malabsorption condition.

During a breath test for food intolerance, patients are required to drink a substrate diluted in water – which can be fructose, lactose, or galactose if these are the suspected intolerances. Breath samples then need to be taken every 40 minutes for three hours and 20 minutes, to monitor how your body is processing the carbohydrate. The patterns of hydrogen and methane can



Test kit

Device



be quantified over time to identify abnormal results associated with maldigestion.

According to the North American Consensus guidelines, a rise in hydrogen levels of ≥ 20 ppm from the baseline levels during breath testing is considered a positive result for maldigestion, indicating that the gut is not properly digesting food, and you may be intolerant to it.



Interested in seeing a sample report of the results of a breath test?

[Click here to take a look!](#)

Tests that lack scientific evidence behind their use

If you search online for tests for food intolerance, you may come across several other tests beyond the ones described above, however, these are the only tests that are routinely used and recommended for diagnosis of a food intolerance in clinical practice. A brief description of some of the other tests that are available, but currently lack the scientific evidence behind their use for diagnosis of an intolerance, is provided below.

Hair analysis

Hair analysis can be used to assess someone's drug use history (17), however, testing the mineral content of hair is sometimes cited as a potential method to identify food intolerance. Hair grows too slowly to give an accurate measure of the current response of the body to foods, and there is no clear mechanism or rationale for how mineral content can be used to reflect potentially complex food intolerances. Some of these tests claim to be able to analyze the energy from hair with "bioresonance", an unproven holistic medical practice. However, there is no evidence to suggest that any form of hair analysis can be used to reliably diagnose food intolerances.

Myth: there is no way to accurately diagnose a food intolerance

Fact: Alongside keeping a food and symptom diary, a healthcare professional may recommend clinically recognized tests to you depending on your intolerance.

Blood test

A blood test can be used to assist in the diagnosis of an allergy, but there is no strong evidence to suggest that blood tests can be used to identify food intolerance. Some companies offer tests that claim to be able to tell whether you are intolerant to many different foods at once. These test a component of your immune system known as IgG antibodies in response to foods. According to the American Academy of Allergy, Asthma, and Immunology: this test has never been scientifically proven to be able to identify intolerances: due to the way the test is designed, it could even indicate you are intolerant to foods that you are actually the most tolerant of (18). Studies indicate that indeed an IgG test performs poorly to identify specific food intolerances (19), however, a subset of people with IBS do seem to improve specifically as a result of eliminating the foods identified via IgG tests (20,21), so the use of IgG testing is more complex, and warrants further research.



I thought food allergy was another word for food intolerance?

A food allergy and intolerance are different. An allergy can be potentially fatal, whereas an intolerance can be very uncomfortable, but not fatal.



Tests for a food allergy

Dietary test

Dietary tests for food allergies are conducted largely the same way as for food intolerances, by using an elimination diet and a food challenge.

The use of a food challenge in combination with an elimination is the gold standard for diagnosis, but as allergic reactions can be dangerous, you will usually be referred to a specialist allergy clinic where this can be conducted safely under close supervision.



Blood test

A blood test can be used to measure the immunological responses of your body to a food, measuring the type of antibody that is associated with the rapid allergic response. During this test, you will provide a blood sample, which will then be tested with different potential allergen foods.



Skin-prick test

Also called a puncture test, or a scratch test, the skin-prick test involves injecting a small amount of the allergen into the skin of the arm. If you are allergic to the substance that was introduced, the skin of your arm will likely become itchy, swollen, and red after a short amount of time. Sometimes several allergens are tested at one time, and a numbered scale is put next to the injection points to identify which allergen was which.

Note: there is a similar form of test known as a patch test that are used to investigate contact dermatitis, however they cannot be used to test for a food allergy.

After the diagnosis of a food intolerance by your doctor, the next steps will be to manage your diet long-term, to reduce or exclude the food that is causing your symptoms. Our next section focuses on the ideal strategies to do this to maximize success, commit to the diet, and manage slip-ups if they occur to keep you feeling your best.

Treatments

Managing your food intolerance



OMED[®]
HEALTH

If you have been diagnosed with a food intolerance, your doctor might refer you to a nutritionist or dietician who can work with you to form a treatment plan to manage your symptoms. Food intolerances are life-long conditions with no ‘cure’, but they can be managed to keep symptoms at a minimum.

Changing your diet

After you have been diagnosed, the next steps will be to remove or reduce the food you are intolerant to from your diet. It is important to go about this alongside advice from your doctor and from specialists like dietitians, who can guide you through the process. Dietitians, also known as nutritionists in the US, are licensed medical professionals by the Health and Care Professions Council (HCPC) who specialize in the science of nutrition and can advise patients about how to best modify their diet to accommodate a health need. People working with a dietitian to modify their diet to be low FODMAPs are consistently shown to have improved compliance to the diet, better understanding of their conditions, and ultimately the best improvement in their symptoms due to dietitian’s guidance (22–24).

Dietitians help to provide evidence-based advice to patients to ensure that they have the skills and confidence to safely manage their diet long-term. They will also ensure that your diet remains nutritionally adequate and can make suitable food substitutions so that you are not at risk of developing a nutrient deficiency. Patients who have food reaction symptoms but do not seek medical advice often resort to restricting their diet without the reliable identification of what is the cause of their symptoms. Many also trial therapeutic interventions based on social media or what family and friends recommend out of desperation to lessen some of the symptoms (25,26). Not only is it likely that an incorrect restriction has been made so symptoms may not improve, but this can increase the risk of nutritional deficiency, and put patients on a path toward developing unhealthy behavior around food.

In particular, it is key to reduce something known as ‘diet-stacking’, whereby multiple dietary restrictions are tried at the same time, sometimes undertaken inadequately to completely remove the food, or in a manner that is too extreme. Unhealthy attitudes towards eating can put you at risk for developing unhealthy habits and behaviours. In extreme cases, this could lead to the development of an eating disorder known as avoidant/restrictive food intake disorder (ARFID), where sufferers lose their enjoyment of food, and have anxiety around eating (27). Research has shown that there is a link between diet restriction and being at risk for ARFID through anxious, and progressively avoidant behavior towards food (28,29), so it is important to take care of your mental health and attitudes when it comes to restricting your diet.

Removing the food

Essentially the treatment for a food intolerance is to remove the identified problem food from your diet. However, how strict you have to be with this, and how much you can ingest without symptoms arising is different for each individual. For a food allergy, you must not ingest any of the food you are allergic to, including any cross-contamination. Cross-contamination occurs when the food has come into contact with another food, and the contents mix or even touch. This means that although the food may not have been made with the particular ingredient, it contains enough in there to make someone with an allergy experience a reaction. Even a very tiny amount of food present can cause life-threatening or even fatal reactions in people with food allergies, so it is especially important to take strict control measures to prevent this from happening. In one study, it was shown that between 1.6 and 10.1 milligrams were capable of producing a reaction (30), which is equivalent to a tiny, barely visible, crumb.



With food intolerances, usually, individuals can tolerate a small amount and so only need to reduce the food from their diet to alleviate symptoms. Using milk as an example, those with lactose intolerance can tolerate on average about 250 ml at one time, and about 500 ml of milk throughout the whole day (31). This means that enjoying a cup of tea or coffee with a small amount of milk in it is usually well tolerated. It is important to remember that each person is different, some people who are intolerant to foods can also be very sensitive, and so may need to avoid the food more strictly than others with a food intolerance.

There are several legal frameworks and authorities that regulate how food is labelled, and described in shops, restaurants, and other eateries to help those with an allergy or food intolerance to eat safely. **In the UK, the Food Standards Agency (FSA) has strict rules about how food is produced and consequently labelled** to ensure the safety of those that require careful diet planning (32). There are 14 food ingredients that are recognized by law as “allergens” that must be stated on a label if it is an ingredient, whether it is used during processing, or there is a risk of cross-contamination – with the phrasing “may contain” used when it cannot be ruled out that trace amounts of an allergen exist in a product. Many of these food ingredients you can also be intolerant to. Although designed for those with allergies, it is important to pay attention to when managing your intolerance. All pre-packed food must have a clear ingredients list with these 14 ingredients emphasized in some way, **usually in bold text** (see the example below, which contains the allergens sesame, and soya beans).



Eating out poses extra risks for those with food allergies and intolerances, but there are ways that you can manage this so that you don't have to feel excluded. If you have an allergy, it is a good idea before you eat out to have an action plan discussed with your doctor, and to have your epi-pen on you if you were prescribed one, making sure to always carry it with your emergency medication. It is also good to be aware of what the FSA sets out as what information eateries should be able to provide for those with food intolerances and allergies to eat safely (32).

A restaurant or other eateries must have up-to-date and informative ingredient information and have good food preparation and hygiene practices to avoid cross-contamination in the kitchen. There must be ingredient information displayed in writing, either through full information available on the menu, chalkboard, or in an information pack that can be provided separately. An example from the FSA is shown on the next page.

DISHES AND THEIR ALLERGEN CONTENT - [INSERT THE NAME OF YOUR FOOD BUSINESS HERE]

DISHES	Celery	Cereals containing gluten	Crustaceans	Eggs	Fish	Lupin	Milk	Molluscs	Mustard	Nuts	Peanuts	Sesame seeds	Soya	Sulphur dioxide
Tuna Salad (example)	✓			✓	✓		✓		✓					


Review date: _____ Reviewed by: _____



Food Standards Agency
food.gov.uk


You can find this template, including more information at www.food.gov.uk/allergy

If food is offered as part of a buffet, allergen information must be provided for each food item separately, although buffets come with a high risk of cross-contamination so may not be suitable for people with very sensitive intolerances or allergies. Do not be scared to ask for information if you cannot see or find it! The service provider should be very willing to assist you, and asking questions about the ingredients is very common. If you are purchasing take-away food, there are similar requirements that ingredient information must be provided in written form (such as an online menu) before the purchase of the food is completed.



Are food intolerances just another health fad?

This is a myth: food intolerances are medically recognized conditions.



Supplements

The idea of supplementing the diet to help alleviate symptoms of your intolerance has been studied, for example, use of peppermint oil for IBS (33). If you have lactose intolerance, taking a lactase supplement (the enzyme that naturally converts lactose to different sugars in those without lactose intolerance) before having food or drink that you know contains lactose may reduce, or even prevent the symptoms, in some people. In a

similar manner, taking xylose isomerase can convert fructose into glucose, and in one study was shown to significantly reduce breath hydrogen levels after fructose ingestion, as well as improve nausea and abdominal pain in those with fructose intolerance (4).

Using probiotics has also been researched for lactose intolerance. Probiotics are live microorganisms that can be supplemented via food sources such as yoghurts to provide health benefits. These microorganisms can either be certain types of bacteria or yeasts. Bacteria is usually assumed to be something that can make you sick, however, there are many beneficial bacteria in and on our bodies – probiotics are made of these ‘good’ bacteria that can help your body remain healthy (34). The rationale behind such an approach is that certain species of bacteria can produce lactase, therefore boosting their numbers in the gut could minimize the effects of the intolerance.



Myth: a food intolerance only affects your digestive system

Fact: a food intolerance can also affect other parts of your body such as your skin, exacerbating conditions such as acne and eczema, as well as causing headaches and tiredness.

A systematic review looked at the use of probiotics in lactose intolerance, and demonstrated that supplementing patients with bacteria known as *Limosilactobacillus reuteri* or *Lactobacillus acidophilus* resulted in significant improvement in symptoms (35), and a further meta-analysis has also demonstrated that probiotics can help improve lactose intolerance symptoms (36). A prebiotic is different to a probiotic. A prebiotic is not a supplement of live microorganisms, but instead is a food component that can support the growth of your microbiome and is usually in the form of indigestible plant fibres. There is some evidence to suggest that taking prebiotics can improve lactose intolerance symptoms through supporting the health of the gut microbiome (35,37).

There isn't enough evidence to suggest taking prebiotics or probiotics as a reliable and viable treatment for food intolerances, especially as food ingredients do not have to undergo the same regulatory procedures to ensure their effectiveness as medicines do. However, according to the NHS they are generally safe and well tolerated, and so might be worth trying (38). Before starting any supplements probiotics or prebiotics, speak to a healthcare professional, as not all supplements are suitable for everyone to take and there may be adverse effects associated.

What to do if you've eaten a food you are intolerant to

If you've accidentally eaten a food you are intolerant to and are experiencing symptoms again, over-the-counter medicine such as antacids or antidiarrheals can be taken to alleviate symptoms, as well as natural remedies that use ingredients like ginger and peppermint can help to calm some of the more unpleasant side effects while you wait for it to pass.

Long-term support

When working towards the management of your food intolerance or allergy with a professional, nutritional counselling can be provided to maximize the success of the diet and ensure healthy eating habits and attitudes toward food is maintained. Upon diagnosis of a food reaction disorder, some patients will exclude a wide range of foods due to anxiety about trace exposure, or similar foods causing reactions – and so long-term support can help to build confidence and knowledge around appropriate management. It is important not to underestimate what small, consistent changes to your diet can do for you. Although they are life-long, intolerances and allergies can fluctuate over time. Intolerances can “flare up” if you have other conditions like IBS or SIBO, which means that you may be unable to tolerate as much of the food you are intolerant to as you usually can. There are lots of resources online that can guide you through your journey to improve your gut health. Head over to our next section where we have summarized a list of trusted sources to ensure you are following evidence-based advice.

Further resources

<https://omedhealth.com>

<https://omedhealth.com/insights-hub/allergies-vs-food-intolerances/>

<https://www.allergyuk.org/resources/food-intolerance/>

<https://www.nhs.uk/conditions/food-intolerance/>

<https://www.foodallergy.org/>

<https://my.clevelandclinic.org/health/diseases/21688-food-intolerance>

<https://www.bda.uk.com/resource/food-allergy-food-intolerance.html>

About us - OMED Health

OMED Health is a dedicated, patient-centric brand created by Owlstone Medical, the global leader in Breath Biopsy®. OMED Health utilizes our expertise in the analysis of exhaled breath, and offers patients and clinicians access to breath-based diagnostic tests, point-of-care (PoC) devices and support resources for a range of conditions. Our initial focus is helping those with gut health issues have an improved quality of life by enabling better, and faster,

understanding and management of their conditions. In digestive health, breath testing is emerging as an effective way for patients to monitor and manage symptoms. We have a dedicated Advisory Group to offer informed perspectives and advice, allowing us to deliver appropriate products and services to our customers.

OMED Health's gut health tests operate by detecting small amounts of hydrogen and methane gases in the breath, which can be collected at home via our clinically validated diagnostic breath testing kits. These gases can be a key indicator of gut health and can signal certain conditions and diseases – such as SIBO and food intolerances.

“People living with digestive health issues currently feel let down. They’re waiting years to get a diagnosis and have little choice but to live their daily lives in discomfort, with many turning to fad diets, supplements, apps and devices that have little or no scientific basis. Through **OMED Health**, we are deploying our breath analysis technology, developed with the support of gut health experts, to provide people with a solution they can trust. Our aim is simple – **helping the billion people globally with digestive health issues live normal lives.**”

Billy Boyle - CEO of OMED Health and Owlstone Medical



Factors that are associated with the development of SIBO in IBS patients.



Subtype of IBS



Demographic



Medication



Dysbiosis



Bacterial Fermentation



Sulfate-reducing Bacteria.

Small intestinal bacterial overgrowth (SIBO) is caused by an excessive number of bacteria in the small intestine (particularly those that usually live in the large intestine), with the common symptoms being abdominal discomfort, bloating, chronic diarrhea, and difficulties in absorbing nutrients. SIBO was found to be more common among IBS patients than healthy patients, suggesting a significant relationship between the two diseases (39). This may be reciprocal relationship: SIBO may induce IBS symptoms in some individuals, while in others, IBS may predispose them to SIBO development.



To complete the at-home breath test kit for SIBO or food intolerances, just blow through the straws provided into the collection tubes at the right times and write down any symptoms you're experiencing. The whole process takes a little over two hours for the SIBO test, or three hours and twenty minutes for food intolerances. Once you've finished, **post your gut testing kit back to us** in the envelope provided. Following analysis, test results along with

interpretation are provided to help diagnose these conditions, and you will receive your results in a report in just a few days.

Our at-home device for analyzing levels of hydrogen and methane on the go will launch soon, with a

waitlist for priority access available. The device will be accompanied by a mobile app that allows viewing of results and tracking of symptoms and other potential triggers. OMED Health's expert gastrointestinal physiologists, or a person's own doctor, would then review the data to help create a personalized plan.



The device itself cannot be used for diagnostic purposes, but users can track hydrogen and methane levels in the breath alongside their symptoms over time to gain a better understanding of their gut health.

SIBO and food intolerances are common causes of digestive discomfort and can be treated either by antibiotics or targeted dietary changes. By using data from the OMED Health tests, and combining it with expert support, personalized health plans can be generated for ongoing management of your gut health. OMED Health's tests are already in use by multiple NHS Trusts across the UK. In addition to providing a platform for the sale of clinical tests, the OMED Health website offers access to news, articles, events, and other patient-targeted content.

For more information about OMED Health and the digestive health tests we offer, visit our website.

References

1. Wang R, Li Z, Liu S, Zhang D. Global, regional, and national burden of 10 digestive diseases in 204 countries and territories from 1990 to 2019. *Front Public Health*. 2023 Mar 28;11:1061453.
2. Rose TC, Pennington A, Kyridemos C, Chen T, Subhani M, Hanefeld J, et al. Analysis of the burden and economic impact of digestive diseases and investigation of research gaps and priorities in the field of digestive health in the European Region—White Book 2: Executive summary. *United European Gastroenterology Journal*. 2022;10(7):657–62.
3. Soubieres A, Wilson P, Poullis A, Wilkins J, Rance M. Burden of irritable bowel syndrome in an increasingly cost-aware National Health Service. *Frontline Gastroenterol*. 2015 Oct;6(4):246–51.
4. Dunford EK, Miles DR, Popkin B. Food Additives in Ultra-Processed Packaged Foods: An Examination of US Household Grocery Store Purchases. *Journal of the Academy of Nutrition and Dietetics*. 2023 Jun 1;123(6):889–901.
5. New data reveals how our diets are changing over time - UK Health Security Agency [Internet]. 2020 [cited 2024 Jan 3]. Available from: <https://ukhsa.blog.gov.uk/2020/12/21/new-data-reveals-how-our-diets-are-changing-over-time/>
6. Mayo Clinic [Internet]. [Cited 2024 Feb 26]. Food allergy vs. food intolerance: What's the difference? Available from: <https://www.mayoclinic.org/diseases-conditions/food-allergy/expert-answers/food-allergy/faq-20058538>
7. Walsh J, Meyer R, Shah N, Quekett J, Fox AT. Differentiating milk allergy (IgE and non-IgE mediated) from lactose intolerance: understanding the underlying mechanisms and presentations. *Br J Gen Pract*. 2016 Aug;66(649):e609–11.
8. Udall J, Weatherly DBJ. Food Sensitivities: What They Are, When They Matter, and How to Heal: Focus on IBS, Migraines, and Depression - Part 1 - Dr. Bojana [Internet]. 2022 [cited 2024 Feb 26]. Available from: <https://drbojana.com/food-sensitivities-what-they-are-when-they-matter-and-how-to-heal-focus-on-ibs-migraines-and-depression-part-1/>
9. Zar S, Benson MJ, Kumar D. Food-specific serum IgG4 and IgE titers to common food antigens in irritable bowel syndrome. *Am J Gastroenterol*. 2005 Jul;100(7):1550–7.
10. Peruhova M, Mihova A, Altankova I, Velikova T. Specific Immunoglobulin E and G to Common Food Antigens and Increased Serum Zonulin in IBS Patients: A Single-Center Bulgarian Study. *Antibodies (Basel)*. 2022 Mar 29;11(2):23.
11. Guo H, Jiang T, Wang J, Chang Y, Guo H, Zhang W. The Value of Eliminating Foods According to Food-Specific Immunoglobulin G Antibodies in Irritable Bowel Syndrome with Diarrhoea. *J Int Med Res*. 2012 Feb 1;40(1):204–10.
12. Zuo XL, Li YQ, Li WJ, Guo YT, Lu XF, Li JM, et al. Alterations of food antigen-specific serum immunoglobulins G and E antibodies in patients with irritable bowel syndrome and functional dyspepsia. *Clin Exp Allergy*. 2007 Jun;37(6):823–30.
13. Houghton LA, Lea R, Agrawal A, Reilly B, Whorwell PJ. Relationship of abdominal bloating to distention in irritable bowel syndrome and effect of bowel habit. *Gastroenterology*. 2006 Oct;131(4):1003–10.
14. Storhaug CL, Fosse SK, Fadnes LT. Country, regional, and global estimates for lactose malabsorption in adults: a systematic review and meta-analysis. *Lancet Gastroenterol Hepatol*. 2017 Oct;2(10):738–46.
15. Barrett JS, Geary RB, Muir JG, Irving PM, Rose R, Rosella O, et al. Dietary poorly absorbed, short-chain carbohydrates increase delivery of water and fermentable substrates to the proximal colon. *Aliment Pharmacol Ther*. 2010 Apr;31(8):874–82.
16. Omer A, Quigley EMM. Carbohydrate Maldigestion and Malabsorption. *Clin Gastroenterol Hepatol*. 2018 Aug;16(8):1197–9.
17. Cordero R, Paterson S. Simultaneous quantification of opiates, amphetamines, cocaine and metabolites and diazepam and metabolite in a single hair sample using GC-MS. *J Chromatogr B Analyt Technol Biomed Life Sci*. 2007 May 1;850(1–2):423–31.
18. The myth of IgG food panel testing | AAAAI [Internet]. [cited 2024 Jan 8]. Available from: <https://www.aaaai.org/tools-for-the-public/conditions-library/allergies/igg-food-test>
19. Hochwallner H, Schulmeister U, Swoboda I, Twaroch TE, Vogelsang H, Kazemi-Shirazi L, et al. Patients suffering from non-IgE-mediated cow's milk protein intolerance cannot be diagnosed based on IgG subclass or IgA responses to milk allergens. *Allergy*. 2011 Sep;66(9):1201–7.
20. Ostrowska L, Wasilik D, Lieners CFJ, Gałęcka M, Bartnicka A, Tveiten D. Igg Food Antibody Guided Elimination-Rotation Diet Was More Effective than FODMAP Diet and Control Diet in the Treatment of Women with Mixed IBS—Results from an Open Label Study. *J Clin Med*. 2021 Sep 23;10(19):4317.
21. Drisko J, Bischoff B, Hall M, McCallum R. Treating irritable bowel syndrome with a food elimination diet followed by food challenge and probiotics. *J Am Coll Nutr*. 2006 Dec;25(6):514–22.
22. Tuck CJ, Biesiekierski JR, Schmid-Grendelmeier P, Pohl D. Food Intolerances. *Nutrients*. 2019 Jul 22;11(7):1684.
23. Barrett JS. How to institute the low-FODMAP diet. *J Gastroenterol Hepatol*. 2017 Mar;32 Suppl 1:8–10.
24. Whelan K, Martin LD, Staudacher HM, Lomer MCE. The low FODMAP diet in the management of irritable bowel syndrome: an evidence-based review of FODMAP restriction, reintroduction and personalisation in clinical practice. *J Hum Nutr Diet*. 2018 Apr;31(2):239–55.
25. Zingone F, Bertin L, Maniero D, Palo M, Lorenzon G, Barberio B, et al. Myths and Facts about Food Intolerance: A Narrative Review. *Nutrients*. 2023 Jan;15(23):4969.
26. Skypala IJ, McKenzie R. Nutritional Issues in Food Allergy. *Clin Rev Allergy Immunol*. 2019 Oct;57(2):166–78.
27. Administration SA and MHS. Table 22, DSM-IV to DSM-5 Avoidant/Restrictive Food Intake Disorder Comparison [Internet]. Substance Abuse and Mental Health Services Administration (US); 2016 [cited 2023 Aug 23]. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK519712/table/ch3.t18/>
28. Harer K, Baker J, Reister N, Collins K, Watts L, Phillips C, et al. Avoidant/Restrictive Food Intake Disorder in the Adult Gastroenterology Population: An Under-Recognized Diagnosis?: 417. *Official journal of the American College of Gastroenterology | ACG*. 2018 Oct;113:S247.
29. Simons M, Taft T, Doerfler B, Ruddy J, Bollipo S, Nightingale S, et al. Narrative review: Risk of eating disorders and nutritional deficiencies with dietary therapies for irritable bowel syndrome. *Neurogastroenterology & Motility*. 2022;34(1):e14188.
30. Ballmer-Weber BK, Fernandez-Rivas M, Beyer K, Defernez M, Sperrin M, Mackie AR, et al. How much is too much? Threshold dose distributions for 5 food allergens. *J Allergy Clin Immunol*. 2015 Apr;135(4):964–71.
31. Living with lactose intolerance. In: *InformedHealth.org* [Internet] [Internet]. Institute for Quality and Efficiency in Health Care (IQWiG); 2018 [cited 2024 Jan 17]. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK534631/>
32. Allergen labelling for food manufacturers | Food Standards Agency [Internet]. [cited 2024 Jan 17]. Available from: <https://www.food.gov.uk/business-guidance/allergen-labelling-for-food-manufacturers>
33. Alammari N, Wang L, Saberi B, Nanavati J, Holtmann G, Shinohara RT, et al. The impact of peppermint oil on the irritable bowel syndrome: a meta-analysis of the pooled clinical data. *BMC Complement Altern Med*. 2019 Jan 17;19:21.
34. Hill C, Guarner F, Reid G, Gibson GR, Merenstein DJ, Pot B, et al. The International Scientific Association for Probiotics and Prebiotics consensus statement on the scope and appropriate use of the term probiotic. *Nat Rev Gastroenterol Hepatol*. 2014 Aug;11(8):506–14.
35. Oliveira LS de, Wendt GW, Crestani APJ, Casaril KBPB. The use of probiotics and prebiotics can enable the ingestion of dairy products by lactose intolerant individuals. *Clin Nutr*. 2022 Dec;41(12):2644–50.
36. Ahn SI, Kim MS, Park DG, Han BK, Kim YJ. Effects of probiotics administration on lactose intolerance in adulthood: A meta-analysis. *Journal of Dairy Science*. 2023 Jul 1;106(7):4489–501.
37. Chey W, Sandborn W, Ritter AJ, Foyt H, Azcarate-Peril MA, Savaiano DA. Galacto-Oligosaccharide RP-G28 Improves Multiple Clinical Outcomes in Lactose-Intolerant Patients. *Nutrients*. 2020 Apr;12(4):1058.
38. nhs.uk [Internet]. 2017 [cited 2024 Jan 24]. Probiotics. Available from: <https://www.nhs.uk/conditions/probiotics/>
39. Ghoshal UC, Shukla R, Ghoshal U. Small Intestinal Bacterial Overgrowth and Irritable Bowel Syndrome: A Bridge between Functional Organic Dichotomy. *Gut Liver*. 2017 Mar;11(2):196–208.

OMED[®] HEALTH

OMED Health
183 Cambridge Science Park
Milton Road
Cambridge
CB4 0GJ

omedhealth.com

