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Patient Information Forum

GUTS UK!

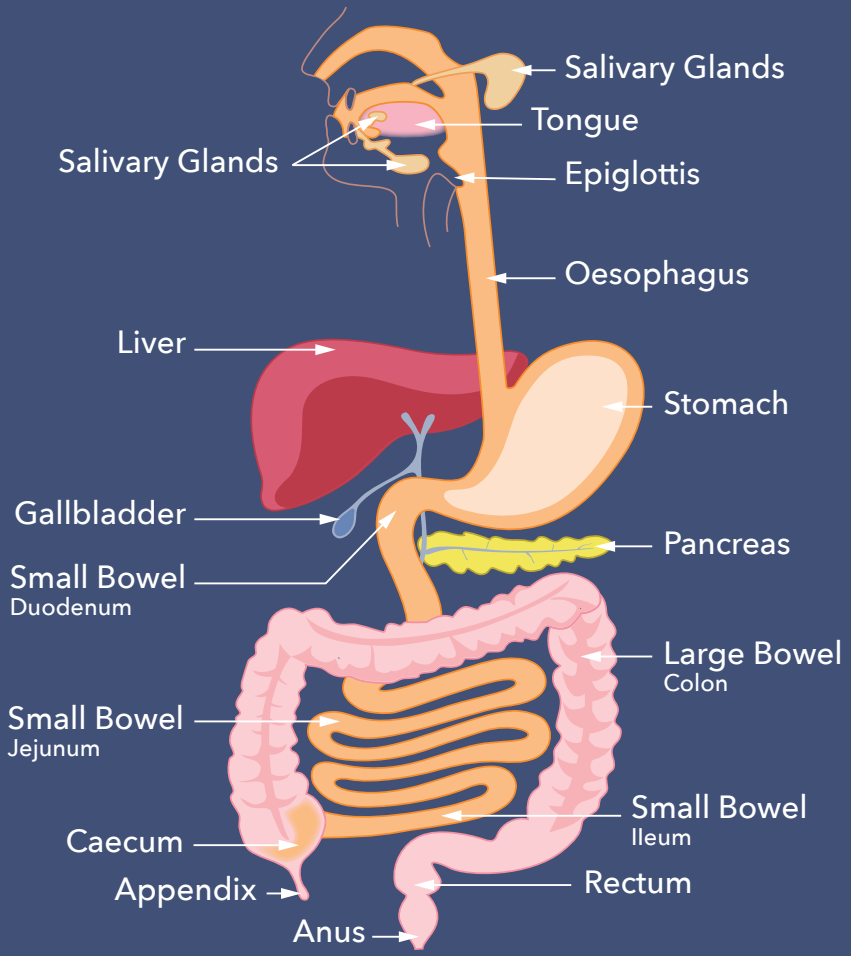
All you need to know about

HEALTHY EATING

BSG BRITISH SOCIETY OF GASTROENTEROLOGY

Our Digestive System

The Digestive System runs from the mouth to the anus and includes the stomach, the large and small bowels (intestines) and a number of accessory organs. The role of the digestive system is to turn food and liquid into the building blocks that the body needs to function effectively.



This leaflet was published by Guts UK charity in 2024 and will be reviewed in 2026. The leaflet was written by Guts UK and reviewed by experts in healthy eating and has been subject to both lay and professional review.

This booklet is about healthy eating and the digestive system.

Contents

Overview

To keep your body healthy, it is important to follow a healthy, balanced and varied diet. A balanced diet includes a good variety of different foods. Healthy eating is part of a healthy lifestyle which can benefit your gut. Other lifestyle activities that are important include keeping active, limiting alcohol and avoiding smoking. These healthful approaches all contribute to a healthy digestive system.

The digestive system

The digestive system runs from the mouth to the anus. It includes the stomach, the large and small bowel. (See page 2) In addition, several other organs, including the salivary glands, liver, gallbladder and pancreas. These other organs are called accessory organs, as they also play a role in digestion. The job of the digestive system is to turn food and fluids into the building blocks that the body needs to work well. To do this it produces, and uses, a variety of enzymes and other substances that aid digestion. Digestion means breaking food down to smaller molecules (parts) to help them be taken into the body.

On average food moves through the digestive system in the following times:

- 2 hours to pass through the stomach.
- 2 hours to pass through the small bowel.
- 20 hours through the large intestine and into the rectum.

But these are averages. It can take longer or shorter times for food to travel though. This is part of normal variation between people.

The length of the digestive tube from mouth to anus is 8 to 9 metres on average. Approximately seven litres of fluid are secreted by the digestive system and its accessory organs each day. When the system works correctly, food is broken down. This is so the nutrients can be absorbed into the body and unwanted products excreted. When one or more of the functions of the digestive system fail, symptoms and disease can develop.

There are many different processes which contribute to a healthy digestive system:

- Ingestion (putting food in your mouth) and digesting food.
- Mechanical digestion (chewing and food being mixed inside the digestive tract).
- Chemical digestion (digestive enzymes and substances breaking food down).
- Absorption (small molecules passing from digestive system into the body).
- Making and passing poo (stool or faeces).

Key components of the digestive system (see pg 2)

Mouth

This is the beginning of the digestive tract. Food that is put into the mouth is broken down by chewing. This is called mechanical digestion. Various enzymes are secreted to help this breakdown. Saliva secreted in the mouth contains 'salivary amylase'. This helps the digestion of carbohydrates to simple sugars. This is called chemical digestion.

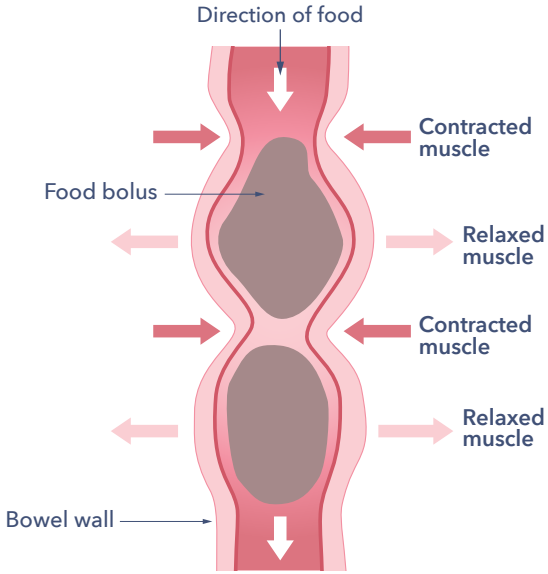
Gullet (oesophagus)

Swallowed food and liquid are transported from the mouth to the stomach. This is through a tube called the gullet. Food is pushed down the gullet by muscular waves. The passage of contents is also helped by sitting upright when eating.

Stomach

The stomach stores and mixes food and liquid. Churning and mixing motions happen due to muscle contractions which is also part of mechanical digestion. Chemical digestion also occurs in the stomach. Food is mixed with gastric juices and digestive enzymes which help to break down food into smaller components. Hydrochloric acid is released by cells in the stomach wall. This is a strong acid which helps enzymes work and kills some unwanted bacteria. The surface of the stomach is protected from the action of the acid by a layer of mucus. The stomach then slowly lets the mixed food and liquid out into the top of the small bowel.

How food (food bolus) moves along the gut



Small bowel (intestine)

The main function of the small intestine is absorption of nutrients and minerals. Most of digestion and absorption occurs in the small intestine. This includes the digestion of proteins, fats and carbohydrates, which are called macronutrients. Some vitamins and minerals are also absorbed in the small intestine. These are called micronutrients because only small amounts of them are needed for a healthy body. Co-ordinated contractions of the small bowel wall squeeze to move food through. This action is called peristalsis. These movements happen in a wave pattern travelling down from one section to the next. The contractions occur behind the food (bolus), pushing it through the digestive system.

Large bowel (intestine)

The main function of the large intestine is to remove water and salt from its contents. This hardens the stool so it can be excreted from the body via the rectum and anus. It is also the main area where microbes are found. These organisms are very important for health. They use the fibre that is not absorbed into the body for energy. They also produce some vitamins, communicate with the immune system.

Accessory organs

Liver

The liver has 500 functions. These include:

- Help with digesting food.
- Storing fuel (glycogen) for the body.
- Helping the blood to clot.
- Removing or processing alcohol, toxins, and medicines from the body.

The liver also makes bile. Bile is stored in the gallbladder before passing into the small bowel, where it helps in digesting fats.

Pancreas

The pancreas has two main functions. These are:

- The production of digestive enzymes, which pass into the small bowel to help the chemical digestion of food.
- The production of hormones, such as insulin, which help control blood sugar levels.

Healthy eating. Why is it important?

Eating a healthy and varied diet can improve general well-being. Good nutrition is essential to get the nutrients to keep the body healthy. Good nutrition also avoids substances that may be harmful. A nutritious varied diet and regular exercise can help you achieve and maintain a healthy body weight.

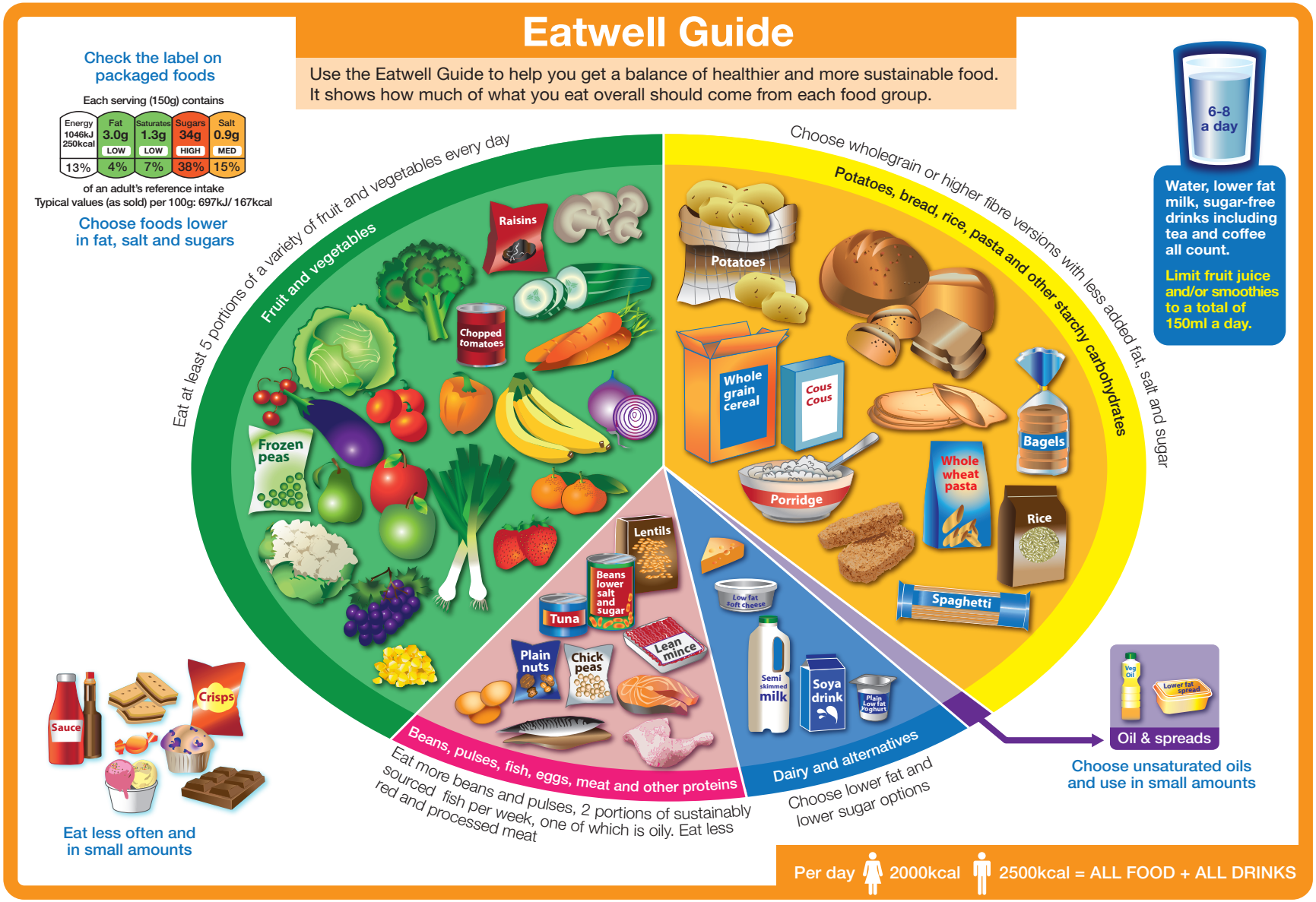
A healthy diet also helps lower the chance of developing some chronic conditions, such as diabetes, heart disease and strokes. In addition, this may reduce the risk of developing certain cancers and types of dementia. Conversely, a poor diet can lead to weight gain which may lead to increased risk of developing certain long-term diseases. Any of these health conditions can lead to a poor quality of life and other health complications. This can result in a decreased life expectancy.

What is a healthy balanced diet?

A healthy balanced diet involves eating a wide range of different foods from a variety of food groups. It also includes eating food in adequate portion sizes.

This picture representation of the ratios of different foods groups to eat every day for a balanced diet.

A balanced diet is essential for good health. Include a variety of foods from each group to achieve this. Starchy foods, vegetables, and fruit should make up the bulk of meals. They contain fibre, an important nutrient in a healthy diet. Fibre is important for good gut health and functioning. It also provides other benefits, such as a lower risk of developing heart disease, Type 2 diabetes, and bowel cancer.



Source: Public Health England in association with the Welsh government, Food Standards Scotland and the Food Standards Agency in Northern Ireland

Green section – fruits and vegetables.

Fruits and vegetables should be eaten regularly. At least five portions per day. A portion is either 80g, small handful or 2 to 3 tablespoons. You should aim for as much variety as you can. It also includes frozen and tinned options in natural juice. This might include mixed frozen fruit and vegetables for example.

Yellow section - starchy carbohydrates

Starchy foods should be consumed regularly. Include one option per meal. Include wholegrain versions of bread, rice, oats and other grains.

Pink section - protein foods

Protein foods such as beans and pulses are also good sources of fibre. This group also includes fish, eggs, and meat.

The World Health Organisation recommends avoiding processed meat. Examples are such as sausages, ham, bacon, salami, and cured red meat. There is an increased risk of developing bowel cancer with these foods. Red meat should be limited to no more than three portions per week. A portion is 350-500g per portion - the size of a pack of cards. To avoid excess fat in the diet, choose lean meat or remove excess fat and the skin from chicken.

Blue section - dairy foods

Dairy foods are rich in calcium, needed for healthy bones and teeth. It is recommended to have three servings a day from this food group.

High-fibre foods

High-fibre foods are beneficial. They have a lower glycaemic index. This index measures how fast foods cause blood sugar to rise after eating. There are different types of fibre. Each type behaves differently in your gut. Fibre types, such as cellulose, aid in stool size and passage, preventing constipation. Gut microbes digest prebiotics. This produces beneficial substances for gut health but can cause bloating. People respond differently to different fibre types. Many foods contain more than one type. Increase intake slowly to allow your gut to adjust. Guidelines recommend aiming for 30 grams of fibre a day for adults and adolescents aged 16-18 years.

Purple section - fats and spreads

Only a small proportion of foods should be made up of foods high in fat. To maintain a healthy diet and lifestyle, it is important to be aware of other factors. These include:

- Maintaining a fluid intake at around two litres per day.
- Monitoring portion sizes. *A meal rule of thumb is this: Use a fist-sized portion of carbohydrate and palm-sized portion of protein.*
- Minimizing fizzy or sugary drinks. Limit fruit juice to a small glass (100ml).
- Limiting alcohol intake to no more than 14 units weekly.
- Aim for less than six grams of salt per day.
- Eating at least two portions of fish per week. One choice should be oily fish. For example, salmon, mackerel, and trout are oily fish. You can also eat sardines, pilchards, kippers, or fresh tuna.
- Replace butter and lard with olive oil and vegetable oil. These are polyunsaturated or mono-unsaturated fats.

Can a vegetarian diet be healthy?

A balanced vegetarian diet can be healthy. The aim is to also to eat a variety of foods. For example, beans, lentils, pulses, cheese and eggs. These foods are good sources of protein. Vegans need to consider their diet carefully. A vegan diet excludes all animal products. If you are vegan, you should take a multivitamin. If you are struggling to eat a variety of foods, consult a dietitian. Your GP can refer you.

Is a ‘clean diet’ healthy?

Many people follow the popular trend of a 'clean' diet. They focus too much on foods considered good for health. They restrict their diet in other areas. But, it is crucial not to cut or remove needed food groups. This can cause malnutrition. It can also lead to long-term health problems. 'Clean' assumes that there are bad and good foods. Some people take this to the extreme. They may develop an eating disorder. It is called orthorexia. Orthorexia is an excessive focus on healthy food. It is best to avoid diets by unqualified influencers. Instead, eat a balanced diet and live a healthy lifestyle. This is best for ongoing health.

All diets need research. This research ensures their effectiveness and safety. If you are concerned about disordered eating, ask your GP for help.

Do I need to take vitamins or supplements?

A healthy balanced diet contains most of the vitamins and minerals you need. Overall, doctors agree that taking supplements have no value to healthy people. Vitamin and mineral supplements can cause side effects. Remember advertisements about supplements suggesting your health will benefit from taking them are a tool to sell more.

There is an exception to this rule for people who live in the UK. The exception is vitamin D. The NHS advises people living in the UK to take vitamin D during the autumn and winter months. This is because the sun is not strong enough for our skin to produce enough for our needs in winter and we do not get enough from food. National Institute of health and care excellence (NICE) guidance for the prevention of vitamin D deficiency recommends adults taking a supplement containing 10 micrograms/400IU, particularly in the Autumn and Winter months.

There are other people who may need to take it more regularly including:

- People who often cover up their skin when outdoors or do not go outside.
- People who live in a care home or other institution.
- People who have darker skin – for example people with African, African-Caribbean or south Asian ethnicities.
- People who have been recommended to take them by their doctor or dietitian.

Monitoring your diet – how and why?

A food diary can help show where diet improvements are needed. You can track your food and drink for two weeks and one weekend. Check this against the guide on page 8 and 9. Then make improvements to your diet. This can help you eat more fibre. It can also help you eat less red and processed meat. Changes can improve your health.

If you have a stomach problems or suspect food intolerance, keep a food and symptom diary. It can help find the problem food. Record the food and type of symptoms and timings. The same food type can cause symptoms one day and not the next. This could be because you have eaten more of it. Check the amount you eat too. Don't change your diet without asking your GP. They may need you to eat specific foods for tests. An example is gluten for coeliac disease. Plus, don't buy food intolerance tests, as they won't show the problem. A dietitian can help you to identify food intolerances. Your GP can refer you to one.

Can stress affect my diet?

Stress is a natural body response. It helps us handle difficult situations. Constant stress can cause stress-related symptoms. It can also harm health, including the digestive system. Stress can also affect your diet. It can make you miss meals or eat unhealthy foods. The gut and brain are closely linked. A healthy diet can help reduce stress symptoms. Managing stress involves exploring different approaches. These are available online and in books. You could start by visiting the NHS website for how to recognise stress and how to manage it.

How important is food hygiene?

Poor food hygiene can increase the risk of food poisoning. Food poisoning is usually brief. But, it can be unpleasant. It is important to wash hands after using the toilet and before handling food. Food should be carefully stored. This is especially true in hot weather and for raw meat. It is best to follow food manufacturers 'use by' and 'best before' dates. Use by dates tell you at what point the food is no longer safe to eat. Avoid consuming meat after the stated use by date. Re-heating food to a temperature of 75 degrees Celsius kills all bacteria. Raw milk can cause food poisoning. This is because it has not been pasteurized. It is better to choose heat-treated milk. Heat treatment includes pasteurization. It also includes ultra heat treatment (UHT).

When should I see a GP about stomach trouble?

Gut problems are common. Report them to a doctor if:

- *A sudden change in bowel function, for example, diarrhoea or constipation.*
- *Bleeding from the back passage.*
- *Increasing heartburn.*
- *Indigestion.*
- *Stomach pain.*
- *Weight loss without trying.*
- *Persistent vomiting.*
- *Difficulty swallowing.*

Research

The gut and food have a complex relationship. This needs more research including:

- *Understanding what the impact of popular diets are on gut health.*
- *How diet and the gut microbiome interact.*
- *The influence of diet on feeling hungry and feeling full.*
- *The interaction between diet and exercise.*
- *The role of food preservatives in the disorders.*
- *What dietary factors might cause digestive disorders. Examples include reflux, diverticular disease, and gallstones.*

References available on request. For further information, visit **gutscharity.org.uk**

Guts UK

The charity for the digestive system

Our guts have been underfunded, undervalued and underrepresented for decades.

"I chose to fundraise for Guts UK because when I was in hospital, I was amongst others with various digestive diseases. It was there that I realised there needs to be so much more awareness for these invisible illness. We must raise much needed funds for this important research!"
Abi, Guts UK fundraiser.

Join our community

It's time the UK got to grips with guts.

With new knowledge, we will end the pain and suffering for the millions affected by digestive diseases. Guts UK's research leads to earlier diagnoses, kinder treatments and ultimately a cure.

Let's get to grips with our guts, and save lives.

Discover more about our fascinating digestive system at gutscharity.org.uk

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info@gutscharity.org.uk

@GutsCharityUK

In the last 50 years we have learnt a lot about the solar system but not so much about the digestive system. In fact, we know more about what goes on up there than in here. And that lack of knowledge about our insides is causing pain and suffering. Guts UK exists to change that.

IT'S TIME THE UK GOT TO GRIPS WITH GUTS

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guts UK!

www.gutscharity.org.uk

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