

Anaemia, iron deficiency, B12, Folate deficiency

Anaemia is a condition where the amount of haemoglobin in the blood is below the normal level, or there are fewer red blood cells than normal.

There are several different types of anaemia and each one has a different cause, although iron deficiency anaemia is the most common type.

Other forms of anaemia can be caused by a lack of vitamin B12 or folate in the body.

Symptoms of iron deficiency anaemia

The main [symptoms of iron deficiency anaemia](#) are tiredness and lethargy (lack of energy). Other symptoms include:

- shortness of breath (dyspnoea)
- changes in your appearance, such as a pale complexion and dry nails

Speak to your DOCTOR if you notice any of these symptoms. They will be able to [diagnose iron deficiency anaemia](#) with a simple [blood test](#).

However, in most cases there won't be any symptoms at all, particularly if the cause is a slow loss of blood.

Symptoms of iron deficiency anaemia

Many people with iron deficiency anaemia will only display a few signs or symptoms of the illness.

The most common symptoms include:

- tiredness
- lethargy (lack of energy)
- shortness of breath (dyspnoea)

Less common symptoms include:

- headache
- tinnitus - perception of a noise in one or both ears or in your head that comes from inside your body, such as a ringing in your ears
- an altered sense of taste
- pica - a desire to eat non-food items, such as ice, paper or clay
- a sore tongue
- feeling itchy

- hair loss
- difficulty swallowing (dysphagia)

Changed appearance

You may also notice changes in your physical appearance. For example, signs you may have iron deficiency anaemia include:

- a pale complexion
- an abnormally smooth tongue
- painful ulcers (open sores) on the corners of your mouth
- dry, flaking nails
- spoon-shaped nails

Slow-developing symptoms

The severity of your symptoms can depend on how quickly your anaemia develops. For example, you may notice few symptoms or they may develop gradually if your anaemia is caused by a chronic (long-term) slow loss of blood, such as a stomach ulcer.

What causes iron deficiency anaemia?

Iron deficiency anaemia occurs when there isn't enough iron in the body. Iron is found in meat, dried fruit and some vegetables. Iron is used by the body to make haemoglobin, which helps store and carry oxygen in red blood cells.

This means if there is a lack of iron in the blood, organs and tissues will not get as much oxygen as they usually do.

There are many conditions that can lead to a lack of iron. In men, and post-menopausal women the most common cause is bleeding in the stomach and intestines. This can be caused by:

- [non-steroidal anti-inflammatory drugs](#) (NSAIDs)
- a [peptic ulcer](#)
- [stomach cancer](#) or [bowel cancer](#)

In women of reproductive age, the most common causes of iron deficiency anaemia are:

- [heavy periods](#)
- [pregnancy](#) - because your body needs extra iron for your baby

Read more about the [causes of iron deficiency anaemia](#).

Causes of iron deficiency anaemia

Iron deficiency anaemia occurs when the body does not have enough iron. A lack of iron can be caused by a number of factors.

Some are outlined below.

Monthly periods

In women of reproductive age, periods are the most common cause of iron deficiency anaemia.

Usually, only women with particularly heavy periods develop iron deficiency anaemia. If you have heavy bleeding over several consecutive menstrual cycles, it is known as menorrhagia.

Pregnancy

It is very common for women to develop iron deficiency during pregnancy. This is because your body needs extra iron so your baby has a sufficient blood supply and receives necessary oxygen and nutrients. Many pregnant women require an iron supplement, particularly from the 20th week of pregnancy.

Gastrointestinal blood loss

Your gastrointestinal tract is the part of your body responsible for digesting food. It is made up of the:

- stomach - a sac-like organ that helps digest food by churning it and mixing it with acids to break it down into smaller pieces
- intestines - which digest and absorb food and liquid

Bleeding in the stomach and intestines is the most common cause of iron deficiency anaemia in men and in women who have been through the menopause (when a woman's monthly periods stop).

Some of the causes of gastrointestinal bleeding are outlined below.

Non-steroidal anti-inflammatory drugs (NSAIDs)

Non-steroidal anti-inflammatory drugs (NSAIDs) can cause bleeding in the stomach. Ibuprofen and aspirin are two commonly prescribed NSAIDs.

If your DOCTOR suspects your medication is causing gastrointestinal bleeding, they may be able to prescribe a less harmful medicine as an alternative. Do not stop taking a medicine prescribed for you unless your DOCTOR advises you to.

Stomach ulcers

The acid in your stomach (which usually helps your body to digest food) can sometimes eat into your stomach lining. When this happens, the acid forms an ulcer (an open sore). This is also known as a peptic ulcer.

Stomach ulcers can cause your stomach lining to bleed and this blood loss can lead to anaemia. In some cases the blood loss can cause you to vomit blood or pass blood in your stools (faeces). However, if the ulcer is slow bleeding, you may not have any symptoms.

In some rare cases, gastrointestinal bleeding can be caused by cancer, usually of the stomach or colon (part of the bowel, which makes up the digestive system).

In diagnosing the cause of your anaemia, your DOCTOR will check for possible signs of cancer. If your DOCTOR suspects cancer, you will be immediately referred to a gastroenterologist (a specialist in treating conditions of the digestive system) for a more thorough examination. This way, if cancer is found, it can be treated as quickly as possible.

Read more information about stomach cancer and bowel cancer.

Angiodysplasia

Gastrointestinal bleeding can also be caused by a condition called angiodysplasia. This is an abnormality of blood vessels in the gastrointestinal tract that can cause bleeding.

Chronic kidney disease

Many people with chronic kidney disease (CKD) develop iron deficiency anaemia.

Most people with kidney disease will be given iron supplements through an injection administered intravenously (into a vein). However, daily ferrous sulphate tablets may be tried first.

Other causes

Other conditions or situations that cause blood loss and may lead to iron deficiency anaemia include:

- inflammatory bowel disease - a condition that causes inflammation (redness and swelling) in the digestive system, such as Crohn's disease and ulcerative colitis
- oesophagitis - inflammation of the gullet (oesophagus) caused by stomach acid leaking through it
- schistosomiasis - an infection caused by parasites and mainly found in sub-Saharan Africa
- blood donation: donating a large amount of blood may lead to anaemia
- trauma - a serious accident, such as a car accident, may cause you to lose a lot of blood
- nosebleeds - if you have a lot of nosebleeds, this may lead to anaemia, although it is rare
- haematuria (blood in your urine) - also rare and may be the symptom of another condition

Malabsorption

Malabsorption (when your body cannot absorb iron from food) is another possible cause of iron deficiency anaemia. This may occur if you have:

- coeliac disease, a condition that damages the lining of the intestines
- a gastrectomy, a medical procedure to surgically remove your stomach, for example to treat stomach cancer

Diet

Unless you are pregnant, it is rare for iron deficiency anaemia to be caused solely by a lack of iron in your diet.

Some studies suggest vegetarians or vegans are more at risk of iron-deficiency anaemia due to the lack of meat in their diet. However, it is possible to gain enough iron in a vegetarian or vegan diet through other types of food such as:

- beans
- nuts
- dried fruit, such as dried apricots
- wholegrains, such as brown rice
- fortified breakfast cereals
- soybean flour
- most dark-green leafy vegetables, such as watercress and curly kale

Pregnant women may have to increase the amount of iron-rich food they consume during their pregnancy to help avoid iron deficiency anaemia.

Treating iron deficiency anaemia

Treatment for iron deficiency anaemia involves taking iron supplements to boost the low levels of iron in the body. This is usually effective and the condition rarely causes complications.

You will need to be monitored every few months to check the treatment is working and your iron levels have returned to normal.

The underlying cause will also need to be treated so anaemia does not come back.

Treating iron deficiency anaemia

Treatment for iron deficiency anaemia usually involves taking iron supplements to replace missing iron and making necessary changes to address the underlying cause.

Iron supplements

Your DOCTOR will prescribe an iron supplement to restore iron missing from your body. The most commonly prescribed supplement is ferrous sulphate, taken orally (by mouth) two or three times a day.

Some people can experience side effects when taking iron supplements including:

- nausea (feeling sick)
- sickness
- abdominal (tummy) pain
- heartburn
- constipation
- diarrhoea
- black stools (faeces)

These side effects should settle down over time. Taking ferrous sulphate with food or shortly after eating may help minimise side effects. Your DOCTOR may also recommend you only take one or two tablets a day, instead of three, if you are finding side effects difficult to cope with.

If ferrous sulphate is not suitable because of side effects, you may be prescribed a different iron supplement called ferrous gluconate. This supplement should cause fewer side effects because it contains a less concentrated dose of iron. However, it may take longer for iron levels in your body to be restored.

Storing iron supplements

If you have young children, it is important to store iron supplements out of their reach. This is because an overdose of iron supplements in a young child can be fatal.

Dietary advice

If a lack of iron in your diet is thought to contribute to your iron deficiency anaemia, your DOCTOR will advise on how to include more iron in your diet.

Iron-rich foods include:

- dark-green leafy vegetables, such as watercress and curly kale
- iron-fortified cereals
- wholegrains, such as brown rice
- beans
- nuts
- meat
- apricots
- prunes
- raisins

To ensure a healthy, well-balanced diet, include foods from all major food groups in your diet. If you have iron deficiency anaemia, eat plenty of iron-rich foods, such as those listed above.

However, some foods and medicines can make it harder for your body to absorb iron. These may include:

- tea and coffee
- calcium, found in dairy products such as milk
- antacids (medication to help relieve indigestion)
- proton pump inhibitors (PPIs), which affect the production of acid in your stomach
- wholegrain cereals - although wholegrains are a good source of iron themselves, they contain phytic acid which can interfere with how your body absorbs iron from other foods and pills

If you are finding it difficult to include iron in your diet, you may be referred to a dietitian (a health professional who specialises in nutrition). They can give you detailed, personalised guidance about how you can change your diet.

Underlying causes

Your DOCTOR will also need to ensure the underlying cause of your anaemia is treated so anaemia does not become a recurrent problem.

For example, if non-steroidal anti-inflammatory drugs (NSAIDs) are causing bleeding in your stomach, your DOCTOR may prescribe an alternative type of medicine to help minimise the risk of stomach bleeding.

Heavy periods (menorrhagia) can also be treated in a number of different ways, using both medicines and special internal devices.

Monitoring

Your DOCTOR will ask you to return for a check-up two to four weeks after you have started taking iron supplements to assess how well you have responded to the treatment. Your haemoglobin levels will be checked in a blood test.

If the result of the blood test shows an improvement, you will be asked to return in two to four months for a further blood test.

Once your haemoglobin levels and red blood cells are normal, your DOCTOR will usually recommend you continue taking iron supplements for three months to help replenish the iron stores in your body.

After this, depending on the cause of your iron deficiency anaemia, you should be able to stop taking the supplements. Your condition will then be monitored every three months for one year.

Continuing treatment

In some people, after iron stores in the body have been replenished, they start to fall again. This could happen if:

- you do not eat an iron-rich diet

- you are pregnant
- you have heavy periods (menorrhagia)

In these circumstances, you may be prescribed an ongoing iron supplement. This will usually be one tablet a day. This will stop your anaemia returning.

If treatment fails

If your iron levels do not improve, your DOCTOR will ask how regularly you have been taking your iron supplements. Some people are put off taking the medication because of the side effects (see above). However, your conditions will not improve if you do not take the supplements.

If you have been taking the supplements as prescribed and your iron levels have still not improved, your DOCTOR may refer you for an assessment with a specialist.

Iron-rich foods

Foods that contain iron include:

- dark-green leafy vegetables, such as watercress and curly kale
- beans
- nuts
- meat
- dried fruit

Some foods and medicines can make it harder for your body to absorb iron. These may include:

- tea and coffee
- calcium, found in dairy products such as milk
- antacids (medication to help relieve indigestion)

Complications

If iron deficiency anaemia is left untreated it can make you more susceptible to illness and infection, as a lack of iron in the body affects your immune system (the body's natural defence system).

Severe iron deficiency anaemia may increase the risk of developing complications that affect the heart or lungs such as:

- tachycardia (an abnormally fast heartbeat)
- heart failure, when your heart is not pumping blood around your body very efficiently

Pregnant women also have a higher risk of complications before and after birth.

Iron is an essential mineral that has several important roles in the body.

For example, it helps make red blood cells, which carry oxygen around the body.

A lack of iron can lead to [iron deficiency anaemia](#).

Good sources of iron

Good sources of iron include:

- liver
- meat
- beans
- nuts
- dried fruit, such as dried apricots
- wholegrains, such as brown rice
- fortified breakfast cereals
- soybean flour
- most dark-green leafy vegetables, such as watercress and curly kale

Many people think spinach is a good source of iron, but spinach also contains a substance that makes it harder for the body to absorb the iron from it.

Similarly, tea and coffee contain a substance that can make it harder for the body to absorb iron. Cutting down on tea and coffee could help improve your iron levels.

Although liver is a good source of iron, do not eat it if you are pregnant. This is because it is also rich in [vitamin A](#), which can damage your unborn baby in large amounts.

How much iron do I need?

The amount of iron you need is:

- 8.7mg a day for men
- 14.8mg a day for women

You should be able to get all the iron you need from your daily diet.

Women who lose a lot of blood during their monthly period ([heavy periods](#)) may need to take iron supplements. Speak to your DOCTOR or a state-registered dietitian for more advice.

What happens if I take too much iron?

The side effects of taking high doses (over 20mg) of iron include:

- [constipation](#)
- nausea
- vomiting
- stomach pain

Very high doses of iron can be fatal, particularly if taken by children, so always keep iron supplements out of the reach of children.

What do we advise?

Most people should be able to get all the iron they need by eating a varied and balanced diet. If you take iron supplements, do not take too much because this could be harmful.

Taking 20mg or less a day of iron supplements is unlikely to cause any harm. However, continue taking a higher dose if advised to by your DOCTOR.

Anaemia, vitamin B12 or folate deficiency

Vitamin B12 deficiency anaemia or folate deficiency anaemia develops when a lack of vitamin B12 or folate causes the body to produce abnormally large red blood cells that cannot function properly.

The main [symptoms of vitamin B12 deficiency or folate deficiency anaemia](#) are:

- tiredness
- lethargy (lack of energy)

You should see your DOCTOR if you have persistent tiredness or lethargy. They will usually be able to diagnose anaemia based on your symptoms and the results of a [blood test](#).

Read more about [diagnosing vitamin B12 or folate deficiency anaemia](#).

Anaemia

There are several different types of anaemia, and each one has a different cause. This topic focuses on anaemia caused by a lack of vitamin B12 or folate in the body.

It also covers pernicious anaemia, which is the most common cause of vitamin B12 deficiency. Read more about the [causes of vitamin B12 or folate deficiency anaemia](#).

For information about anaemia that develops when the body does not contain enough iron, read [iron deficiency anaemia](#).

Vitamin B12 and folate

Vitamin B12 and folate work together to help the body produce red blood cells. They also have several other important functions:

- **vitamin B12** helps to keep the nervous system (brain, nerves and spinal cord) healthy
- **folate** is important for pregnant women because it reduces the risk of birth defects in unborn babies

Vitamin B12 is found in:

- meat
- eggs
- dairy products

The best source of folate is green vegetables such as:

- broccoli
- Brussel sprouts
- peas

Treating vitamin B12 deficiency anaemia

Most cases of vitamin B12 and folate deficiency are easily treated.

Supplements of vitamin B12 are usually given by injection at first, followed by tablets until the deficiency is under control. In cases where there are problems absorbing vitamin B12, such as in pernicious anaemia, you will need supplements for the rest of your life.

Folic acid tablets are used to restore folate levels, which usually need to be taken for four months.

Improving your diet can prevent the condition returning, depending on the underlying cause of your vitamin B12 or folate deficiency.

In rare cases [vitamin B12 or folate deficiency may lead to complications](#), such as problems with the heart, lungs and nervous system and increase your risk of infertility. However, most of these complications can be treated.

Who is affected?

Both vitamin B12 deficiency and folate deficiency are more common in older people, affecting around 1 in 10 people above the age of 75. Vitamin B12 deficiency is rare in younger people, although those who follow a strict vegan diet may be more at risk.

Pernicious anaemia, which is the most common cause of vitamin B12 deficiency, affects 1 in 10,000 people in northern Europe.

Symptoms of vitamin B12 or folate anaemia

Symptoms of each type of anaemia vary depending on the underlying cause of the condition.

However, there are some general symptoms associated with all types of anaemia. These include:

- fatigue (extreme tiredness)
- lethargy (lack of energy)
- breathlessness (dyspnoea)
- faintness

- headache
- tinnitus (the perception of a noise in one or both ears, or inside your head, which comes from inside your body; for example, a ringing in your ears)
- loss of appetite

Vitamin B12 deficiency

If you have anaemia caused by a vitamin B12 deficiency, you may have symptoms listed above, as well as:

- a yellow tinge to your skin
- a sore and red tongue (glossitis)
- ulcers inside your mouth
- an altered or reduced sense of touch
- a reduced ability to feel pain
- a change in the way that you walk and move around
- disturbed vision
- irritability
- depression – feelings of extreme sadness that last for a long time
- psychosis – a condition that affects your mind and changes the way you think, feel and behave
- dementia – a decline in your mental abilities, such as memory, understanding and judgement

Folate deficiency

As well as general symptoms of anaemia, a folate deficiency may also cause:

- loss of sensation, such as a reduced sense of touch or pain
- muscle weakness
- depression

Causes of vitamin B12 or folate deficiency anaemia

Vitamin B12 deficiency and folate deficiency can be caused by a number of things that affect the body's ability to produce fully functioning red blood cells (cells that carry oxygen around the body).

Some of these are described below.

Vitamin B12 deficiency anaemia

Pernicious anaemia

Pernicious anaemia is the most common cause of vitamin B12 deficiency in the UK.

Pernicious anaemia is an autoimmune condition that affects your stomach. An autoimmune condition means your immune system (the body's natural defence system that protects against illness and infection) attacks your body's healthy cells.

Vitamin B12 is absorbed into your body through your stomach. A protein called intrinsic factor attaches itself to vitamin B12 so it can be absorbed from food you eat.

Pernicious anaemia causes your immune system to attack the cells in your stomach that produce the intrinsic factor. This means your body cannot absorb vitamin B12 which causes a deficiency.

The exact cause is not known, but certain things increase your risk of developing pernicious anaemia, including:

- **being 60 years of age** – pernicious anaemia is most common at this age
- **being female** – pernicious anaemia affects slightly more women than men
- **having a family history of the condition** – nearly a third of people with pernicious anaemia also have a family member with the condition
- **having another autoimmune condition**, such as Addison's disease or vitiligo – there is an association between pernicious anaemia and other autoimmune conditions

Diet

The body usually stores enough vitamin B12 to last approximately two to four years. However, it is important to have vitamin B12 in your diet to ensure the store is kept at a healthy level.

A diet that includes meat, fish or dairy products usually provides enough vitamin B12. People who may not have enough vitamin B12 in their diet include vegans (people whose diet only contains food from plants) or those who have a very poor diet for a prolonged period of time.

Conditions affecting the stomach

Some stomach conditions or stomach operations can prevent the absorption of enough vitamin B12. For example, a gastrectomy (a surgical procedure where part of your stomach is removed) increases your risk of developing vitamin B12 deficiency anaemia.

Conditions affecting the intestines

Some conditions that affect your intestines (part of the digestive system) stop you from absorbing as much vitamin B12 as normal. For example, Crohn's disease (a long-term condition that causes inflammation of the lining of the digestive system) can sometimes result in your body not having enough vitamin B12.

Medication

Some types of medicine can reduce the amount of vitamin B12 in your body. For example, proton pump inhibitors (PPIs) (a medication that treats indigestion) can make a vitamin B12 deficiency worse. PPIs inhibit the production of stomach acid, needed to release vitamin B12 from food you eat.

Your DOCTOR will be aware of medicines that can affect your vitamin B12 levels, and will monitor you if they think it necessary.

Folate deficiency anaemia

Folate is a water-soluble vitamin (it dissolves in water), which means your body is unable to store it for long periods of time. Your body's store of folate is usually enough to last four months. This means you need folate in your daily diet to ensure your body has sufficient stores of the vitamin.

Like vitamin B12 deficiency anaemia, folate deficiency anaemia can develop for a number of reasons. Some are described below.

Diet

Some people do not have enough folate in their daily diet. This may be because:

- they have recently changed their diet – for example, to lose weight
- their diet is not healthy and balanced

Malabsorption

Sometimes your body may be unable to absorb folate as effectively as it should. This is usually the result of an underlying condition affecting your digestive system, such as Coeliac disease.

Excessive urination

You may lose folate from your body if you urinate frequently. This can be caused by an underlying condition that affects one of your organs, such as your kidneys or liver.

The following can make you urinate frequently:

- congestive heart failure – where the heart is unable to pump enough blood around the body
- acute liver damage – which often occurs as a result of drinking excessive amounts of alcohol
- long-term dialysis – where a dialysis machine filters waste products from the blood

Medication

Some types of medicine reduce the amount of folate in your body, or make the folate harder to absorb. Your DOCTOR will be aware of medicines that can affect your folate levels and will monitor you if they feel it necessary.

Other causes

Sometimes, your body requires more folate than normal. This can cause folate deficiency because you cannot meet your body's demands for the vitamin. Your body may need more folate than usual when you:

- are pregnant
- have cancer
- have a blood disorder, such as sickle cell anaemia (an inherited disorder that causes your blood cells to change shape)

- are fighting an infection or health condition that causes inflammation (redness and swelling)

Premature babies (babies born before week 37 of the pregnancy) are also more prone to developing folate deficiency anaemia because their developing bodies cannot meet the demand for the folate vitamin.

Pregnancy

If you are pregnant or planning to get pregnant, take a daily supplement of 0.4mg of folic acid until you are 12 weeks pregnant. This will ensure both you and your baby have enough folate, and will help your baby grow and develop.

Folic acid tablets are available with a prescription from your DOCTOR or you can buy them over-the-counter from:

- pharmacies
- large supermarkets
- health food stores

If you are pregnant and also have another condition that may increase your body's need for folate, such as those mentioned above, your DOCTOR will monitor you closely to prevent you from becoming anaemic.

In some cases, you may need a higher dose of folic acid. For example, if you have diabetes (a long-term condition caused by too much glucose in the blood) you should take a 5mg supplement of folic acid instead of the standard 0.4mg.

Diagnosing vitamin B12 or folate deficiency anaemia

A diagnosis of vitamin B12 or folate deficiency anaemia can usually be made based on your symptoms and the results of a [blood test](#).

A full blood count will be made which measures different types of blood cells in the sample.

In particular, your DOCTOR will check:

- whether you have a lower level of haemoglobin than normal
- whether your red blood cells are larger than normal
- how much vitamin B12 is in your blood
- how much folate is in your blood

If your test results indicate you are deficient in either vitamin B12 or folate, it will help determine which type of anaemia you have.

Further tests may be needed to establish the underlying cause of your deficiency and determine the most appropriate treatment.

Referral

In some circumstances, you may be referred to a specialist.

Haematologist

A haematologist is a doctor who specialises in treating blood conditions.

It's likely you will be referred to a haematologist if you have vitamin B12 or folate deficiency anaemia and are pregnant.

You will also be referred to a haematologist if you have symptoms that suggest that your nervous system (the brain, nerves and spinal cord) has been affected. These symptoms may include:

- a reduced or altered sense of touch and pain
- a change in your vision
- an inability to control your muscles

Gastroenterologist

A gastroenterologist is a doctor who specialises in conditions that affect the digestive system. You may be referred to a gastroenterologist if your DOCTOR suspects you do not have enough vitamin B12 or folate because your digestive system is not absorbing it properly.

Dietitian

A dietitian is a healthcare professional who specialises in nutrition. They can give advice about your diet.

You may be referred to a dietitian if you have vitamin B12 or folate deficiency thought to be caused by a poor diet. The dietitian can devise a personalised eating plan for you to increase the amount of vitamin B12 or folate in your diet.

Treating vitamin B12 or folate deficiency anaemia

The treatment for vitamin B12 or folate deficiency anaemia will depend on what is causing the condition.

Different treatments are outlined below.

Vitamin B12 deficiency anaemia

Vitamin B12 deficiency anaemia is usually treated with injections of vitamin B12. The vitamin is in the form of a substance known as hydroxocobalamin.

At first you will have injections every other day for two weeks, or until your symptoms have stopped improving. Your DOCTOR or nurse will give you the injections.

After the initial treatment, your dosage will depend on whether the cause of your vitamin B12 deficiency is related to your diet or not. The most common cause of vitamin B12 deficiency is pernicious anaemia.

Diet related

If your vitamin B12 deficiency is caused by a lack of the vitamin in your diet, you may be prescribed vitamin B12 tablets to take every day between meals. Alternatively, you may need to have an injection of hydroxocobalamin twice a year.

People who find it difficult to get enough vitamin B12 in their diets, such as vegans (people whose diet only contains food from plants), may need vitamin B12 tablets for life. People with vitamin B12 deficiency caused by a poor diet over a long period of time may have their tablets stopped by their DOCTOR once their vitamin B12 levels have returned to normal and their diet has improved. However, it is rarer for a non-vegan to experience vitamin B12 deficiency.

Good sources of vitamin B12 include:

- meat
- salmon
- milk
- eggs

If you are a vegetarian or vegan, or are looking for alternatives to meat and dairy products, there are other foods that contain vitamin B12, such as:

- some fortified breakfast cereals
- some soy products

You can check the nutritional labels of these foods to see how much vitamin B12 they contain.

Not diet related

If your vitamin B12 deficiency is not caused by a lack of vitamin B12 in your diet, you will usually need to have an injection of hydroxocobalamin every three months for the rest of your life.

If you have had neurological symptoms (symptoms that affect your nervous system, such as an altered sense of touch) because of vitamin B12 deficiency, you will be referred to a haematologist (a doctor who specialises in blood conditions). You may need to have injections every two months. Your haematologist will advise on how long you need to keep taking the injections.

If you need replacement injections of vitamin B12, hydroxocobalamin is preferred to cyanocobalamin in the UK. This is because hydroxocobalamin stays in the body longer.

If you need regular injections of vitamin B12, cyanocobalamin will need to be given once a month, while hydroxocobalamin can be given every three months.

As a result of this, cyanocobalamin injections are not recommended and not routinely available on the NHS. However, if you need replacement tablets of vitamin B12, these will be cyanocobalamin.

Folate deficiency anaemia

To treat folate deficiency anaemia, your DOCTOR will usually prescribe daily folic acid tablets to build up your folate levels. They may also give you dietary advice so you can increase your folate intake.

Most people will need to take folic acid tablets for about four months. However, if the underlying cause of your folate deficiency anaemia is persistent, you may have to take folic acid tablets for longer, and maybe for life.

Before you start taking folic acid, your DOCTOR will check your vitamin B12 levels to make sure they are normal. This is because folic acid treatment can sometimes improve your symptoms so much that it masks an underlying vitamin B12 deficiency. If a vitamin B12 deficiency is not detected and treated, it could affect your nervous system (brain, nerves and spinal cord).

Monitoring your condition

To ensure your treatment is working, your vitamin B12 or folate levels will need to be closely monitored.

Around 10 days after starting treatment, you will need a blood test to check your vitamin B12 or folate levels are starting to rise. You will need another blood test after approximately eight weeks to confirm your treatment has been successful.

If you have been taking folic acid tablets, you may be tested again once the treatment has finished (usually after four months).

Most people who have had a vitamin B12 or folate deficiency will not need further monitoring unless their symptoms return, or their treatment is ineffective. If your DOCTOR feels it is necessary, you may have to return for an annual blood test to see whether your condition has returned.

Complications of vitamin B12 or folate deficiency anaemia

As most cases of vitamin B12 deficiency or folate deficiency can be easily and effectively treated, complications are relatively rare.

However, in some cases complications can develop, particularly if you have been deficient in vitamin B12 or folate for some time.

Anaemia complications

Anaemia, regardless of what it is caused by, can lead to heart and lung complications as the heart struggles to pump oxygen to the vital organs.

Adults with severe anaemia are at risk of developing:

- tachycardia – an abnormally fast heart beat

- heart failure – where your heart does not pump blood around your body very efficiently

Vitamin B12 deficiency complications

A lack of vitamin B12 can cause the following complications:

Nervous system

A lack of vitamin B12 can affect your nervous system (the brain, nerves and spinal cord). For example, you may experience:

- vision problems
- memory loss
- paraesthesia (pins and needles) – a prickling or tingling feeling in the arms, legs, hands or feet
- ataxia – the loss of physical coordination, which can affect your whole body and cause difficulty speaking or walking

Fertility

Vitamin B12 deficiency can sometimes lead to temporary infertility (an inability to conceive).

Neural tube defects

If you are pregnant, not having enough vitamin B12 can increase the risk of your baby developing a neural tube defect. Neural tube defects affect your baby's growth and development. Examples of neural tube defects include:

- spina bifida – where the baby's spine does not develop properly
- anencephaly – where the baby's brain and skull bones do not develop properly

Folate deficiency complications

A lack of folate can cause complications, some of which are outlined below.

Fertility

As with a lack of vitamin B12, a folate deficiency can also affect your fertility. However, effects are only temporary and can be reversed by using vitamin supplements.

Cardiovascular disease

Research has shown a lack of folate in your body may increase your risk of cardiovascular disease. Cardiovascular disease is a term that describes a number of health conditions that affect:

- your heart
- your blood vessels
- the way blood circulates (flows) around your body

Cancer

Research has shown folate deficiency can be linked to some cancers, such as stomach cancer. A lack of folate is never the sole cause of a cancer developing, but it may be a contributory factor.

Neural tube defects

As with a vitamin B12 deficiency, a lack of folate can also affect your baby's growth and development in the womb (uterus). This increases the risk of neural tube defects developing in the unborn baby, such as spina bifida.

Premature birth

As well as affecting your baby's growth, a lack of folate during your pregnancy may also increase the risk of your baby being born prematurely (before week 37 of the pregnancy).