

Dialysis

Dialysis is a form of treatment that replicates many of the kidney's functions.

Dialysis filters your blood to rid your body of harmful waste, extra salt, and water.

It's often used to treat advanced chronic kidney disease (kidney failure), where the kidneys have lost most or all of their ability to function.

Most people who need to have dialysis are over 65 years of age.

Why do I need dialysis?

If your kidneys stop working properly, waste products will build up and cause symptoms such as:

vomiting

itchy skin

extreme tiredness (fatigue)

swollen feet, hands and ankles

Without dialysis, kidney failure will eventually be fatal.

How long is dialysis needed?

Many people will need to have dialysis on a long-term basis (possibly for the rest of their lives). However, for a significant minority, the goal will be a kidney transplant.

Someone suitable for a kidney transplant will only need to be on dialysis until a donated kidney becomes available.

For someone who is not suitable for a kidney transplant, dialysis will be needed for the rest of their lives.

Types of dialysis

There are two types of dialysis – haemodialysis and peritoneal dialysis.

Haemodialysis

Haemodialysis is the type of dialysis that most people are aware of. It involves inserting a needle, which is attached by a tube to a dialysis machine, into a blood vessel.

Blood is transferred from your body into the machine, which filters out waste products and excess fluids. The filtered blood is then passed back into your body.

Most people require three sessions a week, each lasting four hours.

Peritoneal dialysis

Peritoneal dialysis is a less well known type of dialysis, but it is becoming more common. It involves using the lining of the abdomen (the peritoneum) as a filter. Like the kidneys, the peritoneum contains thousands of tiny blood vessels, making it a useful filtering device.

During peritoneal dialysis, a small flexible tube called a catheter is attached to an incision in your abdomen. A special fluid called dialysis fluid is pumped into the space surrounding your peritoneum (the peritoneal cavity).

As blood moves through the peritoneum, waste products and excess fluid are moved from the blood and into the dialysis fluid. The dialysis fluid is then drained from the cavity.

The process of peritoneal dialysis lasts about 30-40 minutes and is usually repeated four times a day. Alternatively, you can run it overnight.

Which type of dialysis?

You may be able to choose which type of dialysis you want to use. However, in some situations a particular method of dialysis may be unsuitable – for example, if you have previously had major abdominal surgery.

There is usually no right or wrong answer when it comes to choosing between haemodialysis and peritoneal dialysis, and it is possible to change from one type of treatment to another. You can discuss this with your care team.

Both types of dialysis achieve similar results. However, in some situations a particular technique will be recommended.

For example, peritoneal dialysis is usually recommended for adults who are otherwise healthy apart from having kidney disease. Haemodialysis is usually recommended for older adults whose health is poor.

Both types of dialysis can be carried out at home, which means you do not have to visit hospital or a dialysis unit. Some people see this as an advantage, while others find the prospect daunting and prefer to have regular contact with staff at the hospital or dialysis unit.

Side effects

There are different side effects for haemodialysis and peritoneal dialysis, but both types can make you feel exhausted.

Haemodialysis can also cause itchy skin and muscle cramps, while a common side effect of peritoneal dialysis is infection of the peritoneum with bacteria (peritonitis).

For people receiving haemodialysis, the risk of developing an infection is lower,

Results

Dialysis is a potentially life-saving treatment for people who would otherwise experience significant disability, pain and eventually death. How successful the results of dialysis are depends on a number of factors.

Although dialysis is a demanding treatment that requires considerable personal discipline, many people achieve a good quality of life with some being able to continue in full- or part-time employment.

The average life expectancy of people who start dialysis in their late 20s is 20 years, while older adults aged over 75 on dialysis have an average life

expectancy of four years. This should improve in the future. Some people have been on dialysis for more than 30 years

Why dialysis is necessary

Dialysis may be necessary if a serious kidney infection leads to a sudden loss of kidney function (acute kidney failure), although this is uncommon.

In this circumstance, the loss of kidney function will be temporary, so dialysis will usually only be required for a short time.

Dialysis is often used to replicate the functions of the kidneys while a person is waiting to have a kidney transplant.

How the kidneys work

The kidneys contain millions of tiny filters called nephrons. As blood passes through the kidneys, nephrons filter out waste products and excess fluid which are later passed out of the body as urine.

However, if the nephrons become damaged, the kidneys can lose their filtering ability and dangerous levels of fluid and waste products can build up.

Kidney failure occurs when the kidneys have lost about 90% of their filtering ability. Left untreated, the amount of waste products in the blood will build up to a dangerous level, resulting in coma and death.

Kidney transplant

A kidney transplant is the best way to treat kidney failure. However, it can often take a number of months or years before a suitable donor kidney becomes available. In the meantime, dialysis can be used.

Some people with kidney failure are unable to have a kidney transplant because they have another serious health condition, such as heart failure or cancer. This makes it unlikely that they would survive the transplant procedure.

If you are not suitable for a kidney transplant, you will need to have dialysis for the rest of your life.

Common causes of kidney failure

Common causes of kidney failure include:

diabetes

glomerulonephritis (chronic inflammation of the kidneys)

high blood pressure (hypertension)

These are described in more detail below.

Diabetes

If you have diabetes, your body either does not produce enough of a hormone called insulin (type 1 diabetes), or it does not make effective use of insulin (type 2 diabetes).

Insulin is vital because it breaks down blood sugar (glucose) to produce carbohydrate, which provides energy.

If you have poorly controlled diabetes, too much glucose can build up in your blood. The excess glucose can damage the tiny filters (nephrons) inside your kidneys.

The damaged nephrons can prevent your kidneys from filtering out excess fluid and waste products from your blood.

Glomerulonephritis

In glomerulonephritis, tiny structures inside the kidneys, known as glomeruli, become inflamed.

Glomeruli are an important part of the kidney's filters (nephrons). If they keep getting inflamed, they can become scarred. This can disrupt your kidney's ability to filter and clean waste products from the blood.

Glomerulonephritis is sometimes caused when the body's immune system mistakes harmless proteins inside the kidneys as a threat and attacks the kidneys, leading to inflammation.

However, in many cases, there is no obvious reason why glomerulonephritis occurs.

High blood pressure

Blood pressure is a measurement of the amount of pressure required by your heart to pump blood around your veins and arteries. Too much pressure, known as high blood pressure or hypertension, can damage your body's organs and lead to heart disease.

High blood pressure also causes kidney damage by putting strain on the small blood vessels in the kidneys. This prevents the filtering process working properly.

In 90% of cases of high blood pressure, the causes are unknown. However, there appears to be a strong link between the condition and lifestyle factors, such as being overweight, having a diet that is high in salt, smoking and drinking too much alcohol.

Other causes

Other, less common causes of kidney failure include:

polycystic kidney disease – an inherited condition where cysts (fluid-filled sacs) develop inside the kidneys

repeated kidney infections

renal artery disease – a condition where the arteries supplying blood to the kidneys become clogged with fatty substances called plaques; a reduced blood supply can damage the kidney's tissues

In rare cases, blood that's visible in the urine can signify a renal condition with a potential to progress to kidney failure. This always needs to be investigated by your doctor.

Even quite advanced cases of kidney failure can have few symptoms. This means that the problem is often only identified when blood and protein is found in urine samples or if blood test results are abnormal.

When dialysis is carried out

Dialysis will usually be recommended if your symptoms suggest that your kidneys have lost most of their filtering ability, and the levels of waste products in your blood are dangerously high.

The medical term for this situation is uremia.

Uremia

Uremia is where your blood contains many of the waste products that are usually passed out of your body when you urinate.

The initial symptoms of uremia are prolonged fatigue (tiredness) and drowsiness. You may later experience symptoms such as itchy, dry or flaky skin.

Other symptoms of uremia include:

an unpleasant metallic taste in your mouth

an unpleasant ammonia smell on your breath (ammonia is a chemical that smells like stale urine)

loss of appetite

feeling sick (nausea)

being sick

muscle cramps

sleeping problems (insomnia)

mental confusion

seizures (fits)

Filtration rate

If tests show that your kidneys have lost much of their filtering ability, dialysis may be recommended, regardless of whether you have started to experience the symptoms of uremia.

Dialysis is also often recommended for people with diabetes because the combination of diabetes and uremia could lead to serious complications, such as nerve damage or malnutrition.

Chronic kidney disease is diagnosed by assessing the filtering ability of the kidneys using a measurement called the glomerular filtration rate (GFR). The GFR measures how many millilitres of blood your kidneys are able to filter over a given time.

Using a blood test, GFR can be estimated to a reasonably high degree of accuracy. A person with healthy kidneys would have a GFR of 90 or above.

A GFR below 15 would indicate kidney failure or near kidney failure and dialysis will probably be recommended.

Read more about how chronic kidney disease is diagnosed.

How haemodialysis and peritoneal dialysis are performed

Haemodialysis and peritoneal dialysis are two types of dialysis carried out in different ways.

Haemodialysis

If you decide to have haemodialysis, the first step usually involves creating an arteriovenous fistula (AV fistula). This is a surgically modified blood vessel created by connecting an artery to a vein. The fistula will usually be created in your wrist and upper arm.

Creating a fistula by joining a vein and an artery together makes the blood vessel larger and stronger. This makes it easier to transfer your blood into the dialysis machine and back again.

The operation to create the AV fistula is usually carried out six weeks before haemodialysis begins. This allows the tissue and skin surrounding the fistula to heal.

If your blood vessels are too narrow to create an AV fistula, an alternative procedure known as an AV graft may be recommended. This involves using a piece of synthetic tubing (graft) to connect an artery to a vein.

As a short-term measure, or if haemodialysis is suddenly required due to a medical emergency, you may be given a neck line. This is where a small tube is inserted into a vein in your neck. Once the AV fistula has been created and has had time to heal, the neck line can be removed.

The haemodialysis process

Most people require three sessions of haemodialysis a week with each session lasting four hours. A dialysis session takes at least four hours to complete because your blood needs to be removed and then replaced slowly.

At the start of the session, your blood pressure, skin temperature and pulse will be measured. If you decide to have dialysis at home, you will be trained to take these measurements yourself.

Two thin needles will be inserted into your AV fistula or graft and taped into place. One needle will slowly remove blood and transfer it to a machine called a dialyser or dialysis machine. The dialysis machine is made up of a series of membranes that act as filters and a special liquid called dialysate.

The membranes filter waste products from your blood, which are passed into the dialysate fluid. The 'dirty' dialysate fluid is pumped out of the dialyser and the 'clean' blood is passed back into your body through the second needle.

It would be too dangerous to remove large amounts of blood in one go, so only 40-50ml (two fluid ounces) of blood is removed at any one time.

During your dialysis sessions, you will sit or lie on a couch, recliner or bed. You will be able to read, listen to music, use your mobile phone or sleep. Children who have haemodialysis often find that playing on a mobile games console is an enjoyable way to pass the time.

Haemodialysis is not painful, but some people experience symptoms of nausea, dizziness and muscle cramps during the procedure. This is caused by the rapid changes in blood fluid levels that occur during dialysis.

After the dialysis session, the needles are removed and a plaster is applied to prevent bleeding.

Haemodialysis and fluid intake

If you are having haemodialysis, the amount of fluid that you can drink will be severely restricted.

This is because your kidneys are not working properly. The haemodialysis process itself also limits the amount of fluid you can drink.

Over the course of a day, healthy kidneys constantly remove excess fluid from the body. However, during the haemodialysis process, two to three days' worth of fluid is removed over the course of four hours.

If you drink too much, the dialyser will be unable to remove all of the fluid and excess fluid will build up in your blood, tissues and lungs. This can be serious and lead to:

breathing difficulties

high blood pressure (hypertension)

coronary heart disease – a condition where the blood supply to the heart muscles becomes restricted

The amount of fluid you are allowed to drink will depend on your size and weight. Most people are only allowed to drink 1,000-1,500ml (two to three pints) of fluid a day.

You will also need to avoid eating foods that have a high fluid content, such as:

soup

ice cream

melons

oranges

tomatoes

Many people having haemodialysis find that the restriction on drinking fluids is one of the most challenging aspects of living with dialysis. Chewing gum or sucking an ice cube may help alleviate your symptoms of thirst.

Haemodialysis and diet

As well as removing waste products, your kidneys help regulate the amount of minerals in your body, including:

sodium (salt)

potassium

phosphorus

These minerals are removed during haemodialysis. However, the levels of each mineral can quickly build up between dialysis sessions, particularly if you eat foods high in potassium, phosphorus or sodium.

Excess levels of any of these minerals can be dangerous and lead to:

seizures (fits) and coma

osteoporosis (weakness of the bones)

an irregular heart beat (arrhythmia)

in the most serious cases, sudden death

Before having haemodialysis, you will be referred to a dietitian so that a suitable diet plan can be drawn up for you. Diet plans differ from person to person, but it is likely you will be asked to avoid eating foods high in potassium and phosphorus and to cut down the amount of salt you eat.

Foods high in salt include:

ready-to-eat meals (including ready-to-eat sandwiches)

bacon

ham

smoked fish

cheese

Foods high in potassium include:

bananas

baked potatoes

oranges

chocolate

Foods high in phosphorus include:

dairy products, such as cheese

yoghurt

baked beans

lentils

sardines

bran cereals

Peritoneal dialysis

As with haemodialysis, the first stage in peritoneal dialysis is to create an access point. This is so that the dialysate fluid can pass through your peritoneal cavity (the space surrounding your peritoneum, a thin membrane lining the inside of the abdomen).

To create an access point, an incision is made in your abdomen, usually just below your navel (belly button). A piece of equipment called a Tenckhoff catheter will be inserted into the incision.

A Tenckhoff catheter is a thin piece of tube, about 10cm (four inches) long. The dialysate fluid is passed through the catheter and into the peritoneal cavity. After a dialysis session is complete, the end of the catheter is sealed. You will be shown how to keep the catheter clean to prevent peritonitis (infection of the peritoneum).

The Tenckhoff catheter is permanently attached to your abdomen, which many people find upsetting. If you are unable to get used to the catheter, you can have it removed and you can switch to haemodialysis.

Types of peritoneal dialysis

There are two main types of peritoneal dialysis. They are:

continuous ambulatory peritoneal dialysis (CAPD) – where your blood is filtered several times during the day

automated peritoneal dialysis (APD) – where a machine filters your blood during the night as you sleep

Continuous ambulatory peritoneal dialysis

The equipment used to carry out CAPD consists of:

a bag containing the dialysate fluid

an empty bag used to collect waste products

a series of tubing and clips used to secure both bags to the catheter

a wheeled stand that you can hang both bags from

CAPD involves exchanging old dialysate fluid that contains waste products and excess fluids with new dialysate fluid.

An exchange begins by draining the old fluid into the waste bag. The new fluid is then drained into your peritoneal cavity. The process is painless and takes about 30-40 minutes to complete.

The new fluid is left in the peritoneal cavity for a number of hours (you will be advised about what the best length of time for you is).

As blood passes through the peritoneum, special chemicals in the dialysate fluid draw out waste products and excess fluid from the blood into the fluid. After the set time has passed, you will begin the process again, exchanging the old fluid for the new fluid. Most people who use CAPD require four exchanges a day.

You will be fully trained in how to carry out both types of draining, and will be given detailed instructions about how to keep all of the equipment clean to prevent peritonitis.

Automated peritoneal dialysis (APD)

Automated peritoneal dialysis (APD) works on the same principles as CAPD, except that a machine is used to control the drainage of fluid. You fill the APD machine with fluid before you go to bed. As you sleep, the machine automatically performs a number of exchanges.

You will usually need to be attached to the APD machine for 8-10 hours. You will then usually have one last fill of fluid that is kept in your cavity all day before it is drained away the following evening. During the night, an exchange can be temporarily interrupted if, for example, you need to get up to go to the toilet.

Some people who have APD worry that a power cut or other technical problem could be dangerous. However, it is usually safe to miss one night's worth of exchanges as long as you resume treatment within 24 hours.

You will be given the telephone number of a 24-hour hotline that you can use in case you experience any technical problems.

Dialysis and pregnancy

If you become pregnant while having dialysis, it is usually recommended that you are treated with haemodialysis at a dialysis unit (if you are not being treated already). This will enable your condition to be regularly monitored.

Research has found that pregnant women who are treated with haemodialysis have a healthier pregnancy than women who are treated with peritoneal dialysis.

It is likely that the number of haemodialysis sessions will need to be increased as a precaution to protect the baby from any waste products in your blood. Most

pregnant women require five to six sessions a week, rather than the three sessions that most people have.

Equipment

If you are having home haemodialysis or peritoneal dialysis, it is important that you keep additional supplies of equipment in case of an emergency, such as adverse weather conditions that prevent you from obtaining supplies.

It is recommended that you keep at least a week's worth of equipment as an emergency backup supply. You should also let your electrical company know if you are using home haemodialysis or automated peritoneal dialysis. This is so they can treat you as a priority in the event that your electrical supply is disrupted.

Advantages and disadvantages of the different types of dialysis

If dialysis is recommended for you, you will need to decide whether you want to have haemodialysis or peritoneal dialysis.

Both methods of dialysis are equally effective, so it is usually a case of personal preference.

However, there may be some situations where a particular type of dialysis is recommended. For example, peritoneal dialysis is usually recommended as the first form of treatment for:

children aged two or over

people who still have some limited kidney function

adults who do not have other serious health conditions, such as heart disease or cancer

Haemodialysis is usually recommended for people who are unable to carry out peritoneal dialysis, such as those who:

are visually impaired

have dementia

have a poor state of health

If you decide to have haemodialysis, you will then need to decide whether you want to receive treatment at home or visit a local hospital or dialysis unit for treatment.

If you choose to have peritoneal dialysis, you will have to decide whether you want to have continuous ambulatory peritoneal dialysis (CAPD) or automated peritoneal dialysis (APD).

Any decision you make about which treatment method to have will not be final and it is possible to move from one treatment option to another. Also, depending on your health, you may have to have haemodialysis at some point in the future because peritoneal dialysis may no longer be a safe or suitable treatment for you.

Haemodialysis

The main advantage of haemodialysis is that you have four dialysis-free days a week.

Haemodialysis usually involves using the dialysis machine three times a week, with each dialysis session usually lasting about four hours. Therefore, you will have to plan your life around your dialysis sessions.

If you travel to another country, you will have to pre-arrange access to dialysis facilities. If you are planning to travel, you should inform the staff at your dialysis centre well in advance as they may be able to arrange for you to be referred to a dialysis unit at your destination.

The Global Dialysis website has a database of dialysis units across the world. However, many of these units may charge a fee.

Another disadvantage of haemodialysis is that your diet and the amount of fluid you drink needs to be restricted. For example, many people receiving haemodialysis have to avoid foods that are high in potassium, such as bananas, chocolate and crisps, and they are usually advised not to drink more than a couple of cups of fluid a day.

Read about how dialysis is performed for more information and advice about diet and fluid intake.

Peritoneal dialysis

Unlike haemodialysis, the obvious advantage of peritoneal dialysis is that regular visits to a dialysis unit are not required and, in the case of home haemodialysis, there is no need to have a bulky machine installed in your house.

As the equipment used for peritoneal dialysis is portable, you have more freedom to travel compared with haemodialysis patients.

CAPD equipment is roughly the size of a hat stand on wheels. The equipment used for APD is the size and weight of a small suitcase.

Another advantage of peritoneal dialysis is there are fewer restrictions on diet and fluid intake compared with haemodialysis where there are strict limits on the amount of fluids that you can drink.

One of the main disadvantages of peritoneal dialysis is that it needs to be carried out every day, whereas haemodialysis is usually only carried out three days a week.

Another major disadvantage of peritoneal dialysis is that your risk of developing peritonitis (infection of the peritoneum) is increased.

Repeated episodes of peritonitis can damage your peritoneum (the thin membrane that surrounds your abdomen) and surgery may be required to repair it.

Another drawback of peritoneal dialysis is that the dialysis fluid used can cause a reduction in protein levels, which can lead to a lack of energy and, in some cases, malnutrition.

Weight gain is another possible side effect of peritoneal dialysis.

Continuous and automated peritoneal dialysis

The two types of peritoneal dialysis are continuous ambulatory peritoneal dialysis (CAPD) and automated peritoneal dialysis (APD).

CAPD does not involve using a machine. Instead, portable equipment is used, which includes a dialysis bag that contains fluid and a number of tubes.

With CAPD, regular dialysis sessions are carried out during the day. The sessions are known as exchanges because clean fluid is exchanged with fluid containing waste products. Most people using CAPD have four exchanges a day, with each exchange lasting 30-40 minutes.

In APD, a dialysis machine is used, although it is much smaller than the one used in haemodialysis. Dialysis is carried out during the night as you sleep, with a session lasting 8-10 hours.

The main advantage of CAPD is that the equipment is portable. This gives you more freedom to travel away from your house. For example, you may be able to take your CAPD equipment to your workplace. However, you will need to spend at least two hours a day performing dialysis.

The main advantage of using APD is that your days are dialysis-free. However, you need to keep and maintain a dialysis machine (and the associated equipment) in your house, which does not suit some people.

Side effects of dialysis

Both haemodialysis and peritoneal dialysis cause side effects. This is because of the way dialysis is carried out and the fact that it can only compensate for the loss of kidney function to a certain extent.

Fatigue

Fatigue, where you feel tired and exhausted all the time, is a common side effect in people who have used both haemodialysis and peritoneal dialysis on a long-term basis. Fatigue is thought to be caused by a combination of:

the loss of normal kidney function

the effects that dialysis can have on the body

the dietary restrictions associated with dialysis

the overall stress and anxiety that many people with kidney failure experience

There are several treatment options that may help to improve the symptoms of fatigue.

You may want to talk to your dietitian to see if your diet can be adjusted to increase your energy levels. Research has also shown that regular aerobic exercise can improve the symptoms of fatigue.

If you are fatigued, starting a programme of regular exercise can be difficult, and many people who are on dialysis complain about feeling out of breath. However, if you persevere, you will find that exercising becomes easier with time.

Low-to-moderate aerobic exercise such as cycling, running, walking or swimming is recommended. Your DOCTOR or dialysis care team will be able to advise you about the type of exercise most suitable for you.

Haemodialysis

Low blood pressure

Low blood pressure (hypotension) is one of the most common side effects of haemodialysis. It can be caused by the drop in fluid levels during dialysis. Low blood pressure can cause nausea and dizziness.

The best way to minimise the symptoms of low blood pressure is to keep to your daily fluid intake recommendations. If your symptoms persist, you should consult your dialysis care team because the amount of fluid used during dialysis may need to be adjusted.

Invasive staphylococcal infections

People receiving haemodialysis are at increased risk of developing invasive staphylococcal infections. These infections are caused by staphylococcus aureus bacteria, which are usually responsible for minor skin infections such as boils.

However, the haemodialysis process can allow the bacteria to enter the body where they can cause a more serious infection that can spread through the blood, leading to multiple organ failure. This is known as sepsis or blood poisoning.

Sepsis associated with an invasive staphylococcus infection is the second most common cause of death, after heart disease, in people receiving haemodialysis.

The first symptoms of an invasive staphylococcal infection include:

a high temperature (fever) of 38°C (100.4°F) or above

dizziness, which is related to a decrease in blood pressure, or a worsening of low blood pressure if you already have it

If you have a high temperature, phone your dialysis unit immediately for advice. Alternatively, you can contact NHS 111 or your local out-of-hours service.

If you develop an invasive infection, you will need to be admitted to hospital and treated with injections of antibiotics. Read more about treating staphylococcal infections.

Muscle cramps

During haemodialysis, some people experience muscle cramps, usually in their lower legs. This is thought to be caused by the muscles reacting to the fluid loss that occurs during haemodialysis.

Consult your dialysis care team if you have muscle cramps that become particularly painful. Medication may be available to help you cope with the symptoms.

Itchy skin

Many people receiving haemodialysis experience itchy skin. This is thought to be due to a build-up of potassium in the body. Avoiding foods that are rich in potassium can help reduce the frequency and severity of itching. Some people have also found that using moisturising cream can minimise the discomfort caused by itching.

Other side effects

Other side effects of haemodialysis include:

difficulties falling asleep (insomnia) or staying asleep

bone and joint pain

loss of libido (sex drive)

dry mouth

anxiety

Peritoneal dialysis

Peritonitis

A common side effect of peritoneal dialysis is bacterial infection of the peritoneum (peritonitis). Peritonitis can occur if the dialysis equipment is not kept properly sterilised (free of germs). If there are bacteria on the equipment, they can be passed into the peritoneum.

Lack of appetite and nausea are the initial symptoms of peritonitis. These are quickly followed by abdominal pain, which usually begins as a dull ache in your abdomen before progressing to a steady, severe pain.

Peritonitis is treated with injections of antibiotics (intravenous antibiotics). The antibiotics are usually injected directly into the tissue of the peritoneum.

The most effective way to prevent peritonitis is to keep your dialysis equipment clean. You will be given training in how to do this. If you experience repeated episodes of peritonitis, it may be that you are not a suitable candidate for peritoneal dialysis. If this is the case, you should change to haemodialysis.

Hernia

People receiving peritoneal dialysis are at increased risk of developing a hernia because holding fluid inside the peritoneal cavity for many hours puts a strain on the muscles of the abdomen.

The main symptom of a hernia is the appearance of a lump in your abdomen. The lump may be painless and may only be discovered during a check-up. In some people, certain activities, such as bending over or coughing, can cause a hernia to become painful.

Surgery is usually needed to repair a hernia. During surgery, the surgeon will place the protruding intestine or tissue back inside your abdominal wall. The muscles of the abdominal wall will also be strengthened using a synthetic mesh.

Weight gain

The dialysate fluid used during peritoneal dialysis contains sugar molecules, some of which are absorbed into your body. This can increase your daily calorie consumption by up to several hundred calories a day.

If you do not compensate for these extra calories by reducing the amount of calories that you eat and by taking regular exercise, it is likely that you will gain weight. In a minority of cases, the weight gain can be excessive.

One study found that around 7% of people having peritoneal dialysis will gain around 10kg (two stone) over the course of two years.

If you are concerned that you are gaining too much weight, you should talk to your dialysis team who can recommend a diet and exercise plan that can help you lose weight.

Avoid using fad diets that claim to be able to help you lose a lot of weight quickly. This type of extreme dieting could upset your body's chemistry and make you feel very ill.

Dialysis results

How successful dialysis proves to be in treating kidney failure depends on a number of factors.

These include:

your age

whether you have any other long-term health conditions, such as heart disease or diabetes

the underlying causes that led to kidney failure

Dialysis can only compensate for the loss of kidney function to a certain extent, and having kidneys that do not work properly can place a tremendous strain on the body. In addition, many people who require dialysis are already in a poor state of health.

However, it should be stressed that the survival rates of people who are on dialysis have improved over the past decade and they are expected to continue improving in the future.

One of the biggest influences on expected survival rates is the age at which a person started the dialysis; the younger the better.

For example, people who start dialysis in their late 20s have an average life expectancy of 20 years, while older adults who are over 75 years of age have an average life expectancy of four years.

The underlying cause of kidney failure also has an influence on survival rates. People who have kidney failure as a result of polycystic kidney disease and glomerulonephritis tend to have much better long-term survival rates compared with those who have kidney failure as a result of high blood pressure (hypertension) or diabetes.

The one, five and 10 year survival rates (the amount of people you would expect to still be alive one, five and 10 years after the start of dialysis) for each of the four conditions are as follows:

polycystic kidney disease – 94% for year one, 70% for year five and 42% for year 10

glomerulonephritis – 88% for year one, 58% for year five and 37% for year 10

high blood pressure – 77% for year one, 33% for year five and 14% for year 10

diabetes – 71% for year one, 29% for year five and 11% for year 10

However, as these survival rates are based on people who started dialysis in the past, they probably do not represent an accurate picture of the survival rates of someone starting treatment with dialysis today.