

LIFE IS CHANGE

LIVING WITH
DIALYSIS





LIFE IS CHANGE

LIVING WITH DIALYSIS

4	THE DIAGNOSIS – SUDDENLY EVERYTHING IS DIFFERENT	24	SEEK ADVICE TO ENJOY
4	The diagnosis: renal failure. What does it mean for me?	24	Living with kidney failure – general considerations
6	Learning to accept the new situation	26	What can I do at home?
8	A patient's perspective – Darren J. Cawley	27	Why do I have to control my fluid balance?

10	TREATMENT OF END STAGE RENAL DISEASE – DIFFERENT MODALITIES	28	COPING WITH AND PRESERVING – THE QUALITY OF EVERYDAY LIFE
10	Kidney function and chronic kidney disease	28	Reorganizing everyday life
13	An overview of treatment modalities	30	When times get difficult. How can I cope?
14	Hemodialysis (HD)	32	A patient's perspective – Cayetano Méndez
16	Peritoneal dialysis (PD)	34	Cooperating with medical and nursing staff
17	Kidney transplant	34	Tips for communicating
18	Vascular access for hemodialysis (HD)	36	Fostering quality of life
18	The AV fistula	38	A patient's perspective – Patrice Guyard
19	AV fistula puncture		
20	Caring for the AV fistula	40	THE FAQ'S OF DAILY LIFE – ANSWERED EASILY
20	The vascular access graft		
20	The central venous catheter	42	OUR GLOBAL COMMITMENT – TO HEALTHCARE EXCELLENCE
21	Caring for your central venous catheter	43	B. Braun Avitum renal care centers – when passion meets competence
22	Medication		
22	Antihypertensives		
22	Erythropoietin (EPO)		
22	Iron	44	GLOSSARY
23	Phosphate binders		
23	Vitamin D		

THE DIAGNOSIS SUDDENLY EVERYTHING IS DIFFERENT



THE DIAGNOSIS: RENAL FAILURE. WHAT DOES IT MEAN FOR ME?

Hearing the phrase 'you have renal failure' can be a confusing and frightening moment. These feelings are not unusual but the healthcare team will provide you with support and all the information you need.

It is normal that lots of question will come to mind: What will happen to me? What are the actual effects of renal failure? How can I cope with the problem? These are all very natural reactions to receiving the news. Different people are affected in different ways, and such reactions are all a part of coming to terms with the diagnosis. Although the news is serious and life changing, there is also real cause for optimism and hope. With time, the many strange-sounding terms and unfamiliar daily routines will become second nature to you, almost as if things had never been different. Your life will get back to normal, and you will get back to enjoying it.



DEALING WITH ANXIETY

Many kidney patients suffer from anxiety following the diagnosis. As you confront this anxiety, you will realize that it also has positive aspects, such as a heightened level of attention to your own well-being.



It is important to understand that this process takes time! Gradually, you will become accustomed to the new situation. Patience and a willingness to accept help from relatives, friends, doctors, nurses and specialized medical staff are essential elements of this process.

In no other phase of a disease is it more important to obtain comprehensive information about your condition than during the initial period.

Once you have learned more about kidney function and the course of the disease, it is much easier to accept the diagnosis. Bring family members to consultations with your doctor and to the information sessions at the treatment center and learn more about renal disease and its consequences together. In this guide, you will find valuable information on renal disease and dialysis. More can be found at www.bbraun-dialysis.com. Also, take advantage of opportunities to get in touch with other affected people, for example in self-help groups or patient communities.

Thanks to modern medicine and the wide range of options for advice and support you will soon become more secure in your everyday life. Although there will be changes to your daily routine, the quality of your life should not suffer as a result. Instead, life is gradually reorganized and time and energy rechanneled. You will learn how this can work on the following pages.



LEARN MORE

We have compiled a list of frequently asked questions relating to renal failure and renal care on our website. This is where you will also find delicious recipes, information on travel destinations for dialysis patients, and useful tips that will help you maintain your quality of life.

www.bbraun-dialysis.com



LEARNING TO ACCEPT THE NEW SITUATION

With chronic kidney disease in particular, it is important to take a close look at your daily routine. What do I want to do? What challenges will I have to face, and what are my priorities in life? And furthermore, how can I organize myself so that I can meet my goals?



Careful consideration of these goals will have a positive impact on how you write this new chapter of your life and on the quality of life you will experience in the future.

The following ideas can help you to approach the new situation in a more optimistic way:

- Look forward to the good things in your life. This of course includes your family, friends and environment. Stay in close contact with your doctor, too, who will support and advise you.
- Maintain your hobbies, your social activities and your everyday life.
- Perhaps you feel depressed, angry or resentful as a result of the disease. This is not unusual. Let these emotions run their course and give yourself time to deal with them.

For most kidney patients, treatment will change the course of daily life. New behavior patterns will have to be learned, and there will be new schedules to adhere to. As a result, time and energy will become much more important to you than before. Consider specifically: What things in life are important to me? What makes me feel happy and satisfied?

It is easier to cope with crisis when you find your own answers to questions such as these. It becomes clear that many aspects of life will continue on as they have in the past. It is essential to develop confidence in your environment and in modern renal replacement therapy.



**WELL ORGANIZED
THROUGH EVERYDAY LIFE**
A regular schedule will
keep you strong and help
you stay active.

“Take an active role
in your treatment, not a passive one. You CAN
live a healthy, productive,
proactive life.”



Darren J. Cawley, Ireland

Darren J. Cawley was born in 1978 and he became a dialysis patient at the age of 20. Meanwhile, he received two kidney transplants. Because of the second transplant, he is currently not in need of a dialysis treatment.

A PATIENT'S PERSPECTIVE

by Darren J. Cawley

Why were you on dialysis? How did you become a dialysis patient?

I became a dialysis patient very suddenly. I was a healthy person studying in my second year of a BA in sports & fitness studies in England. It was actually an optician who sent me to the hospital. After numerous tests, I was told I had renal failure. I was told at the time that my high blood pressure had almost led to a stroke, so it was all very frantic and alarming.

The diagnosis: renal failure. How did you handle it? What fears did you have to face?

Being told at 20 you have such a serious disease was an incredible shock. In fact, I was certain a mistake had been made by the medical team. At that time, I guess I appeared to handle it well, but in fact I was in such disbelief I did not really handle it at all at that stage. My life in terms of future dreams, goals and ambitions, at that stage, was in ruins.

What helped you to accept the diagnosis? How did you cope with the disease?

Because my diagnosis happened so suddenly, I had no time to accept the diagnosis. I began hemodialysis less than a week after being told I had renal failure. To go from a healthy sports

student to renal failure in a week left little time for reflection. I just put my body in the hands of the medical team.

What kind of restrictions did you have to learn to live with as a dialysis patient?

What challenges did you have to face?

For me, it was a very steep learning curve. The machines, blood pressure monitors, bloodlines, diet, fistulas, etc. were all new to me. Diet and fluid allowance was probably the most difficult thing initially. There was a lot of foods and drinks suddenly not allowed.

What would your advice be to other people who are diagnosed with renal failure?

First and foremost, when you discover you have renal failure and it is irreversible, then you must accept the condition fully. Acceptance is key. When you have accepted your condition, educate yourself and learn, along with your team, the best way of moving forward toward good health. Take an active role in your treatment, not a passive one. Also, get in contact with other patients in similar circumstances; there are some fantastic role models out there showing what is possible. You CAN live a healthy, productive, proactive life.

TREATMENT OF END STAGE RENAL DISEASE

DIFFERENT MODALITIES

KIDNEY FUNCTION AND CHRONIC KIDNEY DISEASE

The two kidneys are positioned on both sides of the spine behind the abdominal cavity, which is enclosed by the peritoneum. To guard against injury, they are located under the bottom ribs and surrounded by a fatty pillow. They are bean-shaped organs that vary in size slightly depending on body size and also underlying disease. Each kidney is about as big as a fist. On average, they are 10 cm high, 5 cm wide and 4 cm thick. A healthy kidney weighs about 120-200 g. The kidneys are vital organs. They are responsible for the removal of waste products from the body, the regulation of the composition of body fluids and the production of some hormones. Thus, their function is important for balancing the metabolism of your body. In the course of kidney disease, the kidneys may be partly or completely unable to fulfill these tasks. Kidney disease occurs when kidneys can no longer perform these functions at full capacity. Permanently reduced kidney function is referred to as chronic renal failure.

Chronic renal failure is mostly the result of a gradual decrease in the efficiency of the kidneys over a long period. However, in some cases it is the consequence of sudden kidney failure (i.e. acute renal failure). In the case of chronic kidney failure, the kidneys are permanently damaged. Many conditions can lead to chronic renal failure; the most frequent include diabetes, chronic kidney inflammation (glomerulonephritis) and high blood pressure, which damages blood vessels. When the kidneys fail, the production of urine may be reduced. This may also affect the ability of the kidneys to remove waste products. These waste products may then build up in the body resulting in a syndrome called uremia. Common symptoms of uremia include fatigue, loss of appetite, nausea and itchy skin.



FUNCTIONS OF THE KIDNEY

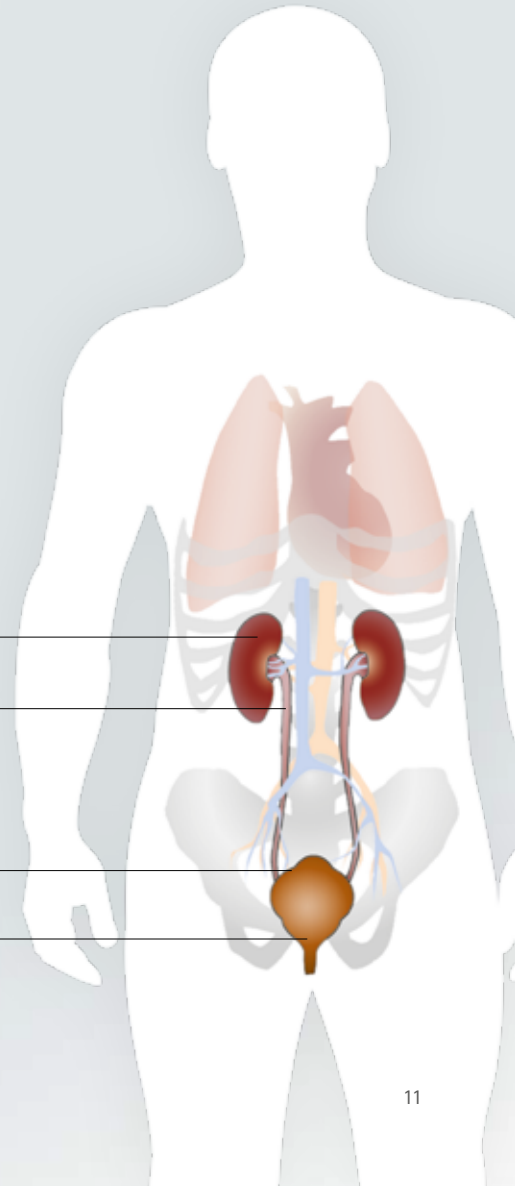
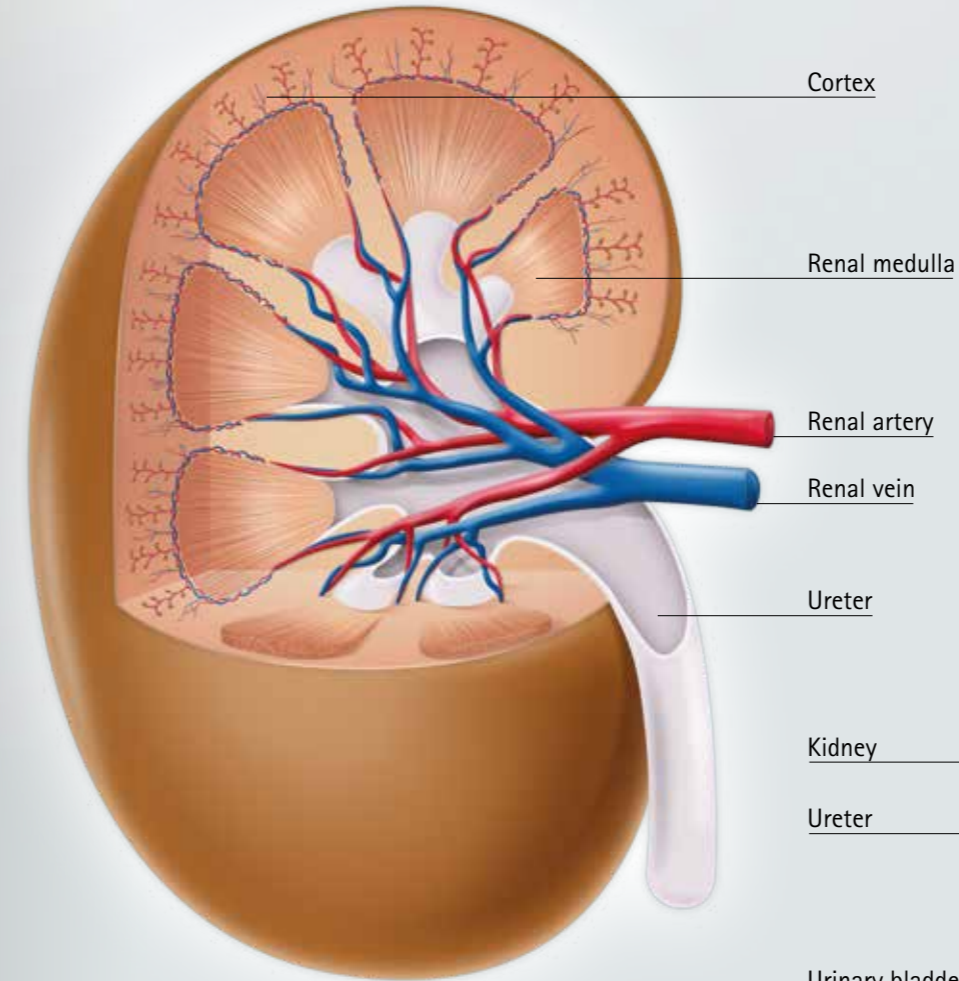
- Waste product removal
- Excess fluid removal
- Acid-base balance regulation
- Electrolyte level regulation
- Blood pressure regulation
- Regulation of red blood cell production
- Regulation of bone metabolism



ADDITIONAL INFORMATION

Helpful videos can be found on our website: www.bbraun-dialysis.com.

THE HUMAN KIDNEY





AN OVERVIEW OF TREATMENT MODALITIES

There are three main types of treatment for renal end stage failure:

- Hemodialysis (HD)
- Peritoneal dialysis (PD)
- Kidney transplant

Hemodialysis and peritoneal dialysis replace many kidney functions, including the removal of waste products, excess salt and fluids. With these therapies, blood pressure and the balance of electrolytes such as potassium, sodium, chloride and phosphate may be controlled. Kidney transplantation is a procedure in which the healthy kidney of another person is implanted into your body. The new kidney replaces your own failing kidneys.

To determine which treatment is best suited for you, various medical, social and psychological factors need to be considered. During the process, your doctor will provide support and advice with regard to the selection of the most appropriate treatment in your present situation.



TIPS

Become an active and well-informed patient by learning as much as possible about all the treatment options. Consider your habits and lifestyle when choosing your optimal treatment option. Please do not hesitate to consult your doctor or healthcare team on these issues.



HEMODIALYSIS (HD)

Hemodialysis cleans your blood using a special filter known as a dialyzer. Those patients who opt for this form of treatment undergo a minor surgical procedure to create a AV fistula that provides easier access to the bloodstream for the staff and makes it more convenient for you. It only takes a few days for the fistula to heal, but we have to give it several weeks to mature, which means to become fully functional and ready to be used. From the AV fistula, blood can readily be channeled to and from the dialyzer through a system of tubes, called bloodlines.

During treatment, the blood is cleaned in the dialyzer. The cleaning process does not cause any pain and many patients will experience improvement of their condition especially in the beginning of dialysis treatment. However, if you feel unwell or uncomfortable during treatment, you should tell the staff, who will help you. Depending on your medical history, you will usually undergo hemodialysis three times a week with an average session time of 4-5 hours each treatment.

ADVANTAGES

- You are completely free on the days between dialysis sessions and need not worry about treatment.
- Thanks to modern technology, blood purification has become gentler and more effective. Treatment usually takes place in a renal care center.



THE MOST COMMON TREATMENT

Hemodialysis is the most common method used to treat chronic kidney failure. It is usually performed at a renal care center under the supervision of experienced and well-trained medical staff.



PERITONEAL DIALYSIS (PD)

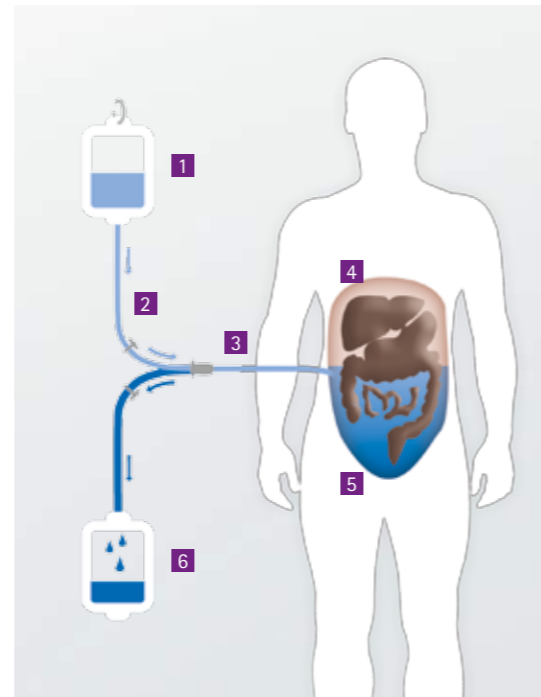
In this form of therapy, the cleaning function of the kidneys is supported or carried out by the peritoneum of the abdominal cavity. A minor surgical procedure is used to permanently insert a soft tube (catheter) into the abdominal cavity. Through this catheter, a special watery solution is introduced into the abdominal cavity that binds waste products, which are filtered through the peritoneum. The solution for peritoneal dialysis is a sterile fluid mainly consisting of glucose or aminoacids which helps with waste removal by the peritoneum. After several hours, the dialysis solution is saturated with waste products from the blood and is drained from the abdomen, then replaced by fresh solution in order to continue the cleaning. This cycle is usually repeated about four times a day but can also be performed once per day under special circumstances. It must be performed carefully to avoid risks like peritonitis which is an infection of the peritoneum.

This procedure is easy to learn. That is why patients can carry out this form of dialysis treatment unassisted and in the comfort of their own homes.

ADVANTAGES

- Fewer changes to your daily routine, compared to hemodialysis, especially as you do not need to travel to the dialysis center for treatment. Integration into working life is often considered to be more feasible as well.
- Fewer restrictions with regard to eating and drinking. Checkups at the treatment center are only necessary monthly or quarterly.

- 1 Fresh dialysis solution
- 2 Tubing
- 3 Catheter
- 4 Peritoneum
- 5 Abdominal cavity
- 6 Drainage bag



KIDNEY TRANSPLANT

A kidney transplant often is a long-cherished wish of many kidney patients. For many, it means returning to a life without being dependent on dialysis centers, a restrictive time schedule and diets, being able to work without constraints and the option to travel more easily. This desire takes concrete form when an appropriate donor kidney is found – a process which may take months or even several years. This long waiting time can be difficult for some patients to cope with, and can cause frustration and stress. These feelings are natural, and your doctor and nursing staff will help you to cope with any concerns you may have.

You should always be aware that kidney transplantation is another valuable treatment option to hemodialysis and peritoneal dialysis and that no treatment modality excludes the other. Most patients who receive a transplant have experienced months or even years on dialysis (hemodialysis or peritoneal dialysis). It is also important to know that the kidney transplantation does not heal the kidney disease. To prevent your body from rejecting the donor kidney, daily medication and regular consultations with your doctor are vital.

Your doctor and nursing staff will always support you in all stages of your kidney disease and all conditions of your life. So do not hesitate to ask, even if you think your question might not be directly related to your treatment.

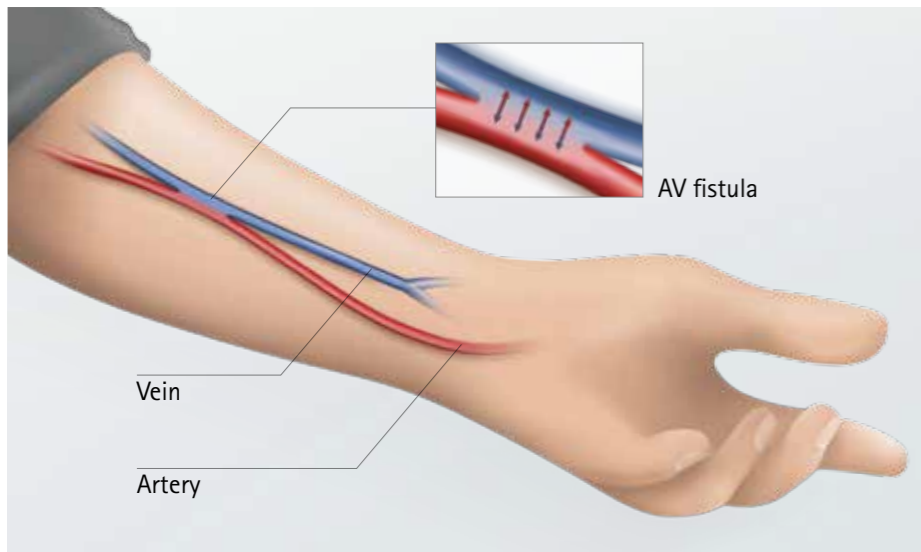
VASCULAR ACCESS FOR HEMODIALYSIS (HD)

Before starting your first hemodialysis treatment, an access route to your bloodstream has to be prepared. This vascular access ensures that the blood can be easily taken from a vein in order to flow through the bloodlines of the dialysis machine to the dialyzer and flow back through the bloodlines into your body. Such an access has to be created by a minor ambulant surgery usually in the arm. The three main types of vascular access for HD are:

- the AV fistula
- the vascular access graft
- the central venous catheter

THE AV FISTULA

For hemodialysis, good vascular access is mandatory in order to carry out dialysis treatment. Therefore, patients undergo a minor surgical procedure whereby a simple connection of a vein to an artery is created. This connection is called AV fistula and is mostly placed on the forearm of the patient. Thereafter the AV fistula will grow in diameter and wall-thickness. This process is called the "maturation of the AV fistula".



This can take up to 8 weeks, but everyone's experience can be different. Giving enough time for maturation is important for having an easy and convenient AV access for the dialysis treatment for a long time.

You can help your fistula to mature by exercising your arm muscles. Small, soft, foam rubber balls developed especially for AV fistula training are best suited for this. Placed in the hand, they are repeatedly squeezed using a pumping motion.

The AV fistula is the most common method used for vascular access. However, in some cases the veins may be too small or fragile for an AV fistula, so that an implantation of a vascular graft or the use of a central venous catheter may be required.

AV FISTULA PUNCTURE

Since inserting a needle into a blood vessel is an invasive procedure, standard infection control protocols must always be followed. Of course, this is something that dialysis staff (doctors and nurses) are fully trained for and to which close attention is paid. Dialysis patients should pay attention to their personal hygiene because they are especially vulnerable to infections as a result of a weakened immune system brought about by their disease.

Before the needle is inserted, the AV fistula arm is disinfected at the puncture area where the needle will be inserted. The dialysis staff will use gloves and follow infection protocols to reduce any risk of infection. Infections of the AV fistula have become a very rare event. Other access modalities, especially catheters bear a higher risk of infection.



TIPS

- As a rule, no blood pressure measurement and no blood sampling or injections on the AV fistula arm
- Avoid heavy soiling of the AV fistula arm (danger of infection!)
- Treat the AV fistula arm with care
- Where possible, do not wear tight clothing and/or long sleeves
- Avoid lifting heavy loads, dangerous activities, and sunburn

CARING FOR THE AV FISTULA

You will also be taught how to feel and listen to your AV fistula by pressing your forearm to the ear. You will hear a 'murmur' and feel a buzz that will confirm your fistula is alright. Some patients also use a stethoscope to listen to their fistula.

THE VASCULAR ACCESS GRAFT

If a patient's veins are too small or fragile for a regular AV fistula creation, a synthetic graft (made from synthetic material) can be used to form a connection between an artery and a vein. It is placed under the skin like the natural vein. As grafts tend to have a higher complication rate, an AV fistula is the preferred option whenever possible.

THE CENTRAL VENOUS CATHETER

A central venous catheter is a flexible tube placed into a central vein in the neck or chest by a doctor. Sometimes it is not possible to wait until an AV fistula is ready before starting dialysis; this is when a central venous catheter is necessary. A central venous catheter may also be required temporarily in case of problems with the AV fistula to bridge the time until the AV fistula is ready to be used again. Catheters can become blocked or infected or cause narrowing of the veins in which they are located. Thus, from time to time a catheter may need to be replaced by a new one. The staff in the renal care center will inform you in case this may be necessary. With good care, a catheter can be a helpful "bridge" while your fistula or graft is healing or can allow you to have dialysis when other forms of vascular access are not available.



CARING FOR THE AV FISTULA

Regular practice with a so-called AV fistula ball will allow you to train and strengthen your vessels before treatment.



CARING FOR THE CATHETER

Watch carefully for signs of infection: redness, swelling, pain, high pulse rate and fever. If you notice any of these signs, contact your renal care center immediately.



AFTER DIALYSIS

Many patients feel tired following a dialysis session. Take it easy for the rest of the day. Normally, you will have your energy back the next day. After consulting with your doctor, you can enjoy sports, such as gymnastics, hiking, cycling and swimming, on dialysis-free days. In fact, you can pretty much do anything that makes you feel good. Sports are very beneficial; physical activity stimulates your metabolism and circulation.

CARING FOR YOUR CENTRAL VENOUS CATHETER

As catheters are prone to infections, it is very important that you follow these simple rules. Always keep your catheter clean and dry. Watch for signs of infection. These include redness, swelling, pain, high pulse and fever. Call your renal care center right away if you notice any of these signs. Never use scissors or other sharp objects near or around your catheter for any reason. Use the dressings your renal care center has recommended.

MEDICATION

As a hemodialysis or peritoneal dialysis patient, you will have different medications prescribed for different purposes. You should always be aware of all medication you take, meaning that you should know their names, purposes and how they are administered. Whenever you have problems with your medications or any questions, do not hesitate to contact your doctor or nursing staff in your renal care center. The following medications are used most frequently:

ANTIHYPERTENSIVES

Many patients suffer from high blood pressure (hypertension). Hypertension can harm you. Therefore, blood pressure has to be regulated with appropriate medication and carefully monitored especially during treatment.

ERYTHROPOIETIN (EPO)

Erythropoietin, often referred to as EPO, is a hormone produced by the kidneys that stimulates the bone marrow to produce red blood cells. Since the production of erythropoietin in chronic kidney disease patients is reduced, the number of red blood cells is also reduced. This is the main aspect leading to a condition known as renal anemia. Synthetic erythropoietin can be given intravenously or through the skin as a substitute for natural erythropoietin in order to maintain an adequate number of red blood cells. It may also be given through the bloodlines of the dialysis machine during the dialysis treatment.

IRON

Iron is a vital building block of hemoglobin, the key protein found in normal red blood cells. Red blood cells are responsible for transporting oxygen within the bloodstream. Without iron, it is difficult for the body to create enough healthy red blood cells. This is why iron supplementation is mostly necessary in addition to EPO. Iron is usually supplied by an intravenous infusion at the renal care center.



MEDICATION

Impaired renal function and hemodialysis can drastically alter the effects of medication. Consult your doctor before making any changes to your current medication.



PHOSPHATE BINDERS

Our kidneys normally excrete the phosphate that is absorbed with food. In chronic renal failure, this no longer happens. Therefore, phosphate levels in the body increase and, in combination with other substances, cause irritation to blood vessels, bone and sometimes the skin. A major side effect of increased phosphate levels can be arteriosclerosis, i.e. calcification of the blood vessels, which leads to heart disease. Dialysis helps in this regard, but it can only eliminate some of the excess phosphate. This means that phosphate levels in the body must be lowered further by means of a low phosphate intake and appropriate medications, known as phosphate binders. These medications 'bind' the phosphate in the gut so that it cannot be absorbed into the bloodstream.

VITAMIN D

Vitamin D is activated in the kidneys and is needed for multiple functions in the body. For example, it is needed for healthy bone. People with kidney disease are often prescribed vitamin D in a pre-activated form as their kidneys cannot activate the vitamin D anymore.

SEEK ADVICE TO ENJOY

LIVING WITH KIDNEY FAILURE – GENERAL CONSIDERATIONS

Because your kidneys no longer function at full capacity, you will need to adapt your diet to compensate for the changes in the body. Helpful information about what foods are good for you and what you should pay attention to when eating and drinking can be found below. The recommended diet depends on several factors such as your likes and dislikes, the stage of kidney function, the type of treatment you are receiving and other conditions you may have, e.g. diabetes. The information below is not intended to substitute for professional dietary advice but can give you an overview of the most common nutritional aspects. Please follow the recommendations of your doctor and dietician who will help you find a mode of nutrition that suits you best.

1. As a dialysis patient, you will need protein in your diet because of the fact that some protein is lost during dialysis. Your diet should include at least 1 g of protein per kg of body weight daily, i.e. 70 g of protein if you weigh 70 kg. Protein is an important nutrient for many bodily functions. By eating enough and the right type of high-protein food, you ensure that you will have an adequate supply of energy. You should avoid unwanted weight loss, because dialysis treatment is a demanding process. It is important to keep up your reserves.

2. Raised phosphate levels can cause bone decalcification and arteriosclerosis in the long term. To protect the vessels and bones, your intake of phosphate should only be 800-1,200 mg per day. Most of the phosphate we take in is contained in proteins, e.g. in meat and milk. It is also important to take your phosphate binders as prescribed.



3. If the kidneys no longer excrete enough potassium, potassium levels in the blood can rise (hyperkalemia), especially after eating food rich in potassium. Hyperkalemia is a very dangerous condition because it causes life threatening cardiac arrhythmias. Hyperkalemia occurs mostly without any symptoms, which is a major contribution to its threatening character. Therefore, potassium intake should be controlled. Your doctor will advise you accordingly.

4. Because many people produce less urine when they have renal failure, it is important to make sure you do not drink too much to prevent fluid build up between dialysis sessions. Your doctor or nurse will advise you of the amount you should drink daily. The rule of thumb is that your allowance will be the equivalent of 500 ml plus your average daily urine output. But you are not expected to measure your urine output volume daily.

5. Salt used for cooking and enhancing the taste in our foods is called sodium chloride. However, when you have kidney failure you cannot effectively regulate the sodium level in the blood anymore. The sodium level can affect the fluid balance; too much sodium can contribute to high blood pressure and cause you to feel thirsty and drink more. Therefore, the intake of sodium (salt) you take in your diet should be controlled. You are usually advised not to add salt to your food at the table and to use only small amounts in cooking. Fresh foods are lower in salt, as salt is added to many processed foods for flavoring. Limit the amount of processed foods you eat and look at the labels for salt and sodium on the ingredients list. The lower the level of salt or sodium on the list of ingredients, the better. Your dietician, doctor or nurse will advise you accordingly.



LOW-SALT DIET

With a low-salt diet, you replace salt as a carrier of flavor with fresh garden herbs such as parsley and chives.



PERSONALIZED NUTRITION

Be aware of what you eat and drink, and maybe keep a food diary. Stay informed on what you should be eating. Additional helpful tips can be found on our website: www.bbraun-dialysis.com.

WHAT CAN I DO AT HOME?

- Basically, you can eat anything that appeals to you. Ensure that your diet is varied, that you like it and that you are able to stick to your diet. Review your diet with your dietician, doctor or nursing staff with special focus on the nutrients explained before (proteins, phosphate, potassium, fluid intake and salt).
- Take your time while eating and enjoy your meal.
- Seek advice on the correct dosage of phosphate binders, and when you should take them.
- Correct preparation of your food is very important! Even some food containing high potassium, e.g. potatoes and fruits can be eaten if prepared correctly. Those foods need to be hydrated before you eat them, which means to put them in water to leach the potassium from the food. To avoid salt, use herbs and other spices. Avoid processed and prepared food whenever possible. And ask in the restaurant about the salt, phosphate and potassium content. Enjoying self-prepared, fresh food will contribute to your well-being.
- Do not drink directly from bottles. Instead, use a cup or glass that allows you to monitor exactly how much you drink. Especially in the beginning, it can be helpful to note your daily intake exactly to discuss it with your doctor and nursing staff at the renal care center and to compare your notes to the laboratory results with them. Additionally, limit your salt intake. Too much salt will make you thirsty.



FRUIT

You can safely enjoy apples, citrus fruits, blueberries, strawberries and raspberries.



NUTS

Macadamia nuts are preferable to other varieties of nuts. However, please ensure that they contain no added salt.



WHY DO I HAVE TO CONTROL MY FLUID BALANCE?

One of the main functions of the kidneys is to maintain the balance of fluid in the body. In kidney failure, the most common problem is that the body cannot eliminate excess fluid. This condition is called fluid overload. In its extreme form, fluid will seep into the lungs, causing pulmonary edema and shortness of breath. In its minor form, it will seep in your legs and cause your legs to swell – you may already have experienced this effect. The goal of treatment is to achieve a fluid balance that is close to normal. Your weight measured after dialysis, which removes excess fluid and restores normal fluid balance, is called “dry weight.” We use this weight to calculate how much fluid needs to be removed during dialysis.

The fluid allowance for each patient is determined by the amount of urine produced in a 24-hour period. The rule of thumb for the fluid allowance is the equivalent of 500 ml plus your average daily urine output. Fluid allowances vary from person to person and also depend on body size, residual kidney function and your dialysis treatment modality. Weight gain should not exceed 1-1.5 kg during one dialysis-free day, and 1.5-2.5 kg over 2-3 days. If large amounts of fluid have to be removed during dialysis, discomfort can result. Your blood pressure may fall and you may feel dizzy and/or nauseous. Moreover, it can also damage your heart.



WEEKENDS

You should be a little more cautious with your choice of food and the amount you drink on weekends, because the interval to the next dialysis session is a day longer, which means that more potassium can accumulate in your body.



FURTHER READING

A variety of tasty recipe ideas for dialysis patients and many more tips and tricks regarding food can be found on our website: www.bbraun-dialysis.com.

COPING WITH AND PRESERVING THE QUALITY OF EVERYDAY LIFE



REORGANIZING EVERYDAY LIFE

For most people needing dialysis, the biggest change in their lives is the amount of time they have to plan in every week for dialysis sessions. In addition, regular visits to the doctor and follow-up appointments are also necessary.

Thanks to modern medicine and dialysis methods, it is now easier to maintain more personal freedom in everyday life. Putting together a daily routine merely requires a little more time management and flexibility. During the initial period, it is best to develop a weekly schedule in which you keep track of medical appointments as well as anything else of importance to your work, your hobbies and your private life. This will help ensure that you can continue to do the things you love.



After a while, the new routine will become second nature to you – as if it had never been different.

Another aspect of coping with change is your family and social life. Remember that your previous roles in life, e.g. as wife, husband, parent, boyfriend, girlfriend or expert in your particular profession, are still there and remain important. Make a conscious effort to take care of them. Together with the right medical care, this will help you to preserve and balance the quality of your everyday life.



A crisis is always a challenge. It means learning to deal with unfamiliar, unsettling circumstances that reveal our limitations. However, even though it is often difficult to recognize, there is also a positive side to any crisis: a crisis can serve as a wakeup call, prompting us to examine and reorganize our priorities. Hence, a crisis has a cleansing effect and stimulates new developments in our lives. With this knowledge, difficult times are easier to endure. Accepting this as a part of life can provide us with a chance to grow as human beings. Remember the staff in your renal care center are always available and there for you if you need help.

WHEN TIMES GET DIFFICULT. HOW CAN I COPE?

People who are struggling with the changes in their life often say they feel like they are "floating." Many patients with chronic disease go through this, both at the onset of their illness as well as during its course. Because their lives seem to have become unpredictable and uncertain, they can lose hope. Managing problems the old way does not work the way it used to. Disappointment and despair can set in. Tension levels rise. Although some people can mobilize their energy and resources during a crisis to resolve the situation, many react with inner withdrawal and resignation.



SUPPORT IN DIFFICULT TIMES

- Give in to your feelings, even the negative ones.
- Try to express your feelings and talk about them if you need to.
- In your mind's eye, visualize beautiful situations and allow yourself to enjoy pleasant day-dreams.

“My closest friends say that you would not even know that I am sick and that I definitely do not act like it.”

Cayetano Méndez, Tenerife
Cayetano Méndez was born in 1953 and he became a dialysis patient in 2015. Currently Cayetano is working as an accountant and adviser in his own small company.



A PATIENT'S PERSPECTIVE

by Cayetano Méndez

Why were you on dialysis? How did you become a dialysis patient?

The main reason was high blood pressure. Despite the annual medical check-ups when they told me my blood pressure was higher than normal and advised me to monitor it, I never experienced any symptoms or took any medication for 12 years, and I never took it as seriously as I should have done or considered the potential risks my condition could involve. Everything got more complicated once I turned 50: high blood pressure with evident kidney damage, angina and heart damage, anemia, severe fatigue, and, on top of that, type II diabetes. Finally, after a number of tests, I began hemodialysis in 2014 at the age of 62.

What kind of restrictions did you have to learn to live with as a dialysis patient? What challenges did you have to face?

Diet, but I do not regard it as a restriction, more like paying more attention to what you eat and how you combine foods. The staff in the dialysis center gave me some leaflets and answered my questions. With my wife's support, it is fair to say I do not deprive myself

of anything. The greatest challenge is the loss of spontaneity when it comes to traveling and vacations. Everything has to be organized quite a long time in advance.

How do you organize your daily life? How do you manage to reconcile work and dialysis time-wise? Do you use the time in the renal care center for your work?

I have "educated" my customers so they know that for four-and-a-half hours three days a week I am at my "second job", and they respect that. Even though they know that I am not available, I still have my tablet and cell. Obviously, it was a learning curve and took some time to get used to. I do not even share my time on hemodialysis with my friends and family, and I have learned that the key is to remain relaxed, quiet and calm. It is my time for me.

How do your employees deal with your disease?

We do not talk about my condition; it does not have any bearing on the day-to-day running of the business. My closest friends say that you would not even know that I am sick and that I definitely do not act like it.

COOPERATING WITH MEDICAL AND NURSING STAFF

During renal therapy, doctors and nursing staff are an important focal point in your life. The bond of trust you forge with the staff will help you feel more secure during routine therapy. Use this relationship and trust to prevent the misunderstandings that can often arise as a result of stress or the many unknown medical terms, for example. When interacting with medical staff, many patients do not have the confidence to ask clarifying questions, make requests or express criticism. Our recommendation? Be open to everyone, as good communication with doctors and nursing staff is also good for your health – both mental and physical.

TIPS FOR COMMUNICATING

- Your doctor and the nursing staff always have your best interests at heart. They will support you to the best of their knowledge and ability.
- Just ask! Anything that you do not understand can be explained to you by doctors or the nursing staff. Review the issue for as long as it takes for you to understand everything. This will give you added peace of mind and facilitate cooperation.
- Most conflicts are not intentional, but rather due to misunderstandings. Keep this in mind when interacting with members of the medical staff as well. If in doubt, keep asking questions!

NUTRITION ADVICE

Trained dietitians will assist you with making changes to your diet that will better suit your medical condition.





FOSTERING QUALITY OF LIFE

Quality of life is generally thought of as a state of well-being of body, mind and soul combined with and enhanced by satisfying interactions with one's personal environment. Ultimately, however, the definition of quality of life is different for each individual.

Carefully consider what quality of life means to you. At the same time, take a look at individual aspects of life and evaluate what is important to you: food and drink, exercise and fitness, travel and holidays, sexual relations, self-determination and flexibility, social contacts and occupation, etc. A positive feeling will certainly begin to emerge once you have defined your personal criteria for quality of life. Perhaps you have added some points to the ones above, perhaps you have discarded one or two. Look at what is really important to you and what may just be nice to have because you are accustomed to it. It can also be beneficial to let go of the familiar and be open to new things. This can lead to an entirely new awareness, a new personal attitude that can help you better cope with your life.



A new perspective on life could also lead to positive changes: You will learn to enjoy things in an entirely new way, to stop and smell the roses, as it were. A good conversation, a spontaneous trip, a well-structured day that runs smoothly in spite of your treatment, beautiful moments with friends – things such as these are the essence of quality of life. Together with your treatment, this approach can give you the freedom and the security you need for a happy and fulfilled life.



BEING AT WORK

Many patients with chronic kidney disease work full- or part-time. With your doctor's agreement and an open discussion with your employer about the relevant issues, you will be able to stay on the job. Discuss the details with your treatment team.



Patrice Guyard, Châteauroux

Patrice Guyard was born in 1954. In 2010, his renal function started to be affected by diabetic nephropathy. In 2015, Patrice started with the renal replacement therapy.

“You have **to plan ahead**
if you want to go away on
the **weekend** or on **holidays**”

A PATIENT'S PERSPECTIVE

by Patrice Guyard

Which restrictions do you have to live with your disease?

In everyday life, it is the diet that is restrictive, low in potassium and no sugar, as well as fluid restriction; it is pretty strict. Having to come for treatments 3 times a week, the mornings are occupied; the first 3 hours of dialysis pass quickly, but the last is very long.

How did you cope with the disease?

I organize my time according to my dialysis and my medical appointments. You have to plan ahead if you want to go away on the weekend or on holidays in order to arrange the dialysis sessions.

How do the people around you (family, friends) deal with your disease?

Pretty good, my daughters are aware and interested and my wife and I manage daily; she prepares my pillbox and follows the same diet as me, because she prepares the meals.

How do you manage your diet?

I had a consultation with the dietician from the department who explained the diet, gave a list of prohibited foods and food portions; it is my wife who manages the meals and thus soaks the vegetables twice, etc.

THE FAQ'S OF DAILY LIFE ANSWERED EASILY

WHAT DO I HAVE TO WATCH OUT FOR WITH RESPECT TO MY DIET?

In kidney disease in particular, a balanced diet is essential for your well-being and to avoid further complications. However, it can hardly help to improve your kidney function. Formulate a diet plan together with your doctor and dietician that is right for you and your dietary goals.

DOES DRIVING POSE A RISK?

Kidney disease has no effect on your ability to drive. However, if you are suffering from heart problems or impaired vision as a result of the disease or feel unwell after treatment, then ask your doctor for advice.

CAN I SMOKE?

Studies have shown that smoking is harmful. Smoking puts a strain on the heart and blood vessels. If you are undergoing dialysis, then you should stop smoking.

HOW DOES THE DISEASE AFFECT MY JOB?

Being on dialysis does not automatically mean that you must stop working. Many patients with chronic kidney disease work full- or part-time. If your doctor agrees and you feel well enough, you should continue to work. To a large extent, your treatment plan can be adapted to suit your needs.

WHAT ABOUT EXERCISE & SPORTS?

Sports in general have various beneficial effects on health like lowering cholesterol or glucose levels in your blood, improving coordination skills and enhancing cardiovascular abilities. Many kidney patients find that physical exercise contributes significantly to live a normal life. Get the approval of your doctor before you take part in any sport. The training regime should also be fun. Try different things and find out which exercises leave you feeling well – both physically and emotionally.

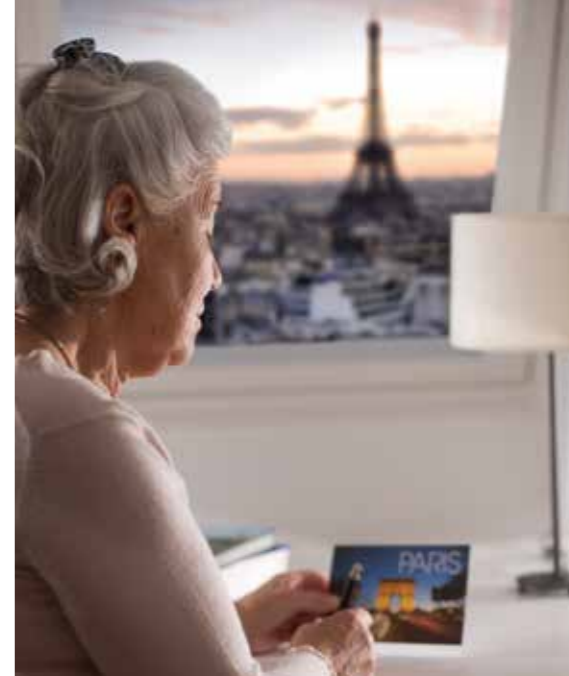


TIP

Our renal care centers are spread all over the world. You will find more information on our holiday destinations and interesting facts about renal care while on vacation on our website: www.bbraun-dialysis.com.

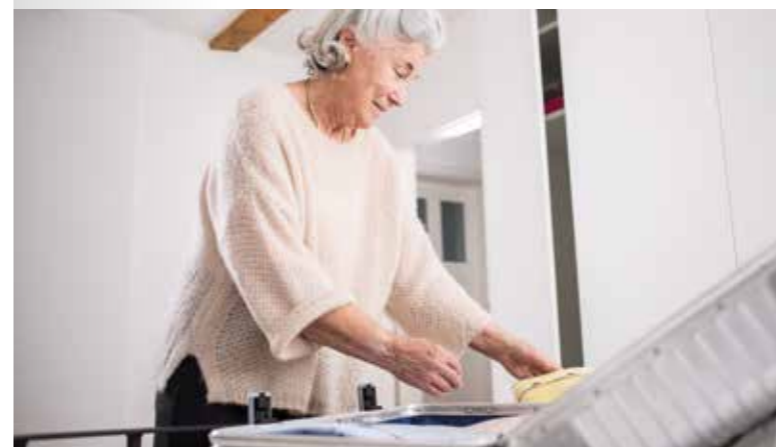
WHAT ABOUT SEXUAL RELATIONS AND FAMILY PLANNING?

The physical and emotional changes caused by chronic disease can also affect your sex life. Sexual appetite and sexual activity can be reduced as a result. Men may experience impotence at the beginning of dialysis treatment. Talk to your doctor about this. Such problems can usually be easily resolved by adjusting your medication. Women are generally able to have children in spite of kidney disease. However, careful risk assessment and close coordination with your doctor is essential.



WHAT DO I NEED TO CONSIDER WHEN I GO ON HOLIDAY?

Of course, it is also possible to travel with chronic kidney disease. With that said, any holiday trips will require planning, particularly if they involve long-distance travel. Ask your medical support team to assist you with your plans. They will support you in organizing your dialysis sessions during your holidays and provide you with advice, e.g. regarding vaccination or nutrition so that your vacations will give you the rest and relaxation you need. If you are a PD patient, inform your doctor of your travel destination. He or she can then arrange for your dialysis supplies to be delivered to your destination.



OUR GLOBAL COMMITMENT TO HEALTHCARE EXCELLENCE



A family-owned company founded in 1839 in Melsungen, Germany, B. Braun is now one of the world's leading manufacturers of medical devices and pharmaceutical products and services. In four separate divisions with over 55,000 employees in 64 countries, B. Braun develops high-quality product systems and services for users around the world. Every service provided by B. Braun embodies the company's full expertise and deep understanding of users' needs.

In developing its products, product systems and services, B. Braun acts like a sparring partner: a companion who promotes developments through constructive dialog and the motivation to improve things. With its constantly growing portfolio of effective medical care solutions, B. Braun makes a substantial contribution toward protecting and improving people's health.

B. BRAUN AVITUM RENAL CARE CENTERS – WHEN PASSION MEETS COMPETENCE

In more than 300 renal care centers located in almost 30 countries around the world, B. Braun provides high-quality care for patients suffering from chronic kidney disease. Across our network, we offer all relevant dialysis modalities, provide early diagnosis and pre-dialysis programs and cooperate with local transplant organizations as well.

Our well-trained doctors and nurses provide not only professional medical treatments but also personal care. Enhancing our patients' quality of life is our uppermost goal, so we provide information and education for all relevant aspects of life, such as diet or a healthy lifestyle. Our patients can leverage our network's holiday dialysis program, experiencing first hand our quality of care while they are away from home. Quality is clearly a key aspect of our daily work. Thus, we are certified in accordance with EN ISO 9001:2008 and Good Dialysis Practice standards. The use of the latest and, more importantly, most

reliable technology supports this goal by ensuring quality and safety during therapy.

Being not only a provider of medical care but also a leading manufacturer of products for extracorporeal blood treatment, we stand for quality in each relevant aspect of the treatment.



GLOSSARY

TERM	EXPLANATION	PAGE
Acute renal failure	The sudden and mostly temporary loss of kidney function. Acute renal failure can be caused by several factors such as diminished blood supply to the kidneys, obstructed urine flow or traumatic damage to the kidneys caused by an accident, for example. Acute renal failure can be treated by pharmaceuticals or renal replacement therapy (often at the intensive care unit in a hospital) or both.	10
Arteriovenous (AV) fistula	A blood vessel that is made by surgically sewing together an artery and a vein (often in the forearm) to create the rapid blood flow needed for efficient hemodialysis treatment. It is also called a native fistula if it is created solely with sutures and without synthetic material.	14
Blood pressure	The pressure exerted by the blood against the walls of the blood vessels, especially the arteries. High blood pressure increases the risk of heart attack and stroke and is treated by blood pressure medication (antihypertensives).	9
Catheter	A flexible plastic tube for insertion into a body cavity or vessels used to allow the passage of fluids.	16
Chronic kidney disease	The slow and progressive loss of kidney function over several years, resulting in permanent kidney failure called end-stage renal disease (ESRD). People with permanent kidney failure need dialysis or a kidney transplant to replace the work of the diseased kidneys.	6
Diabetes	A disease in which abnormal carbohydrate metabolism causes high glucose levels and which can lead to kidney failure. About 40% of all patients with diabetes develop kidney disease. More than 40% of all dialysis patients suffer from diabetes.	10

TERM	EXPLANATION	PAGE
Dialysis treatment	An artificial medical treatment process by which toxic waste products and water are removed from a patient's body.	8
Dialyzer	The filtering unit of a dialysis machine. The dialyzer removes waste products and excess water from the blood.	14
EPO	A commonly used abbreviation for erythropoietin.	22
Erythropoietin	A hormone produced by healthy kidneys that tells the bone marrow to produce erythrocytes (red blood cells). Synthetic hormone versions are available for kidney patients. Lack of this hormone may lead to renal anemia.	22
Hemoglobin	The substance in erythrocytes which carries oxygen around the body. The iron contained in hemoglobin is responsible for the red color of the blood. A decreased level of hemoglobin is known as anemia. Anemia can cause tiredness, shortness of breath and paleness.	22
Kidney transplantation	Means implantation of a kidney from a donor. It is mainly performed if one's kidneys do not work.	13
Peritoneum	The Peritoneum is a membrane in your abdomen.	10
Phosphate	Phosphate is a substance found in many foods. The kidney usually keeps the balance right by removing it when there is too much in the body. Impaired kidneys mostly are unable to remove phosphate. As a consequence phosphate levels in the blood may rise. High phosphate levels may cause itching, and lead to hardening of the arteries (arteriosclerosis) or bone diseases.	13

GLOSSARY

TERM	EXPLANATION	PAGE
Potassium	Potassium is a mineral and it is found in many foods, such as fruits and vegetables (like bananas, potatoes or cucumber), coffee and crisps. When the kidneys are not working properly potassium may not be removed and the blood levels may get high. If the potassium levels are too high or too low it may affect the heart rhythm.	13
Renal anemia	The drop of hemoglobin values caused by kidney disease. It leads to a reduction in the oxygen-carrying capacity of blood.	22
Renal care center	The place where a team of healthcare professionals treat kidney patients. It may also be called dialysis center, as kidney patients receive dialysis treatment in the center.	14
Vascular access	A method of gaining entry to the bloodstream so that dialysis can be performed. AV fistula is one form of access for hemodialysis.	18
Vascular access graft	An access that is made by connecting one end of a piece of artificial vein to the patient's vein and the other end to the patient's artery. The graft is a larger vessel that allows the rapid blood flow needed for efficient hemodialysis. It is commonly called a graft.	18



B. Braun Avitum AG | Schwarzenberger Weg 73-79 | 34212 Melsungen | Germany
Tel. +49 5661 71-0 | dialysis@bbraun.com | www.bbraun-dialysis.com



**You will find more information and interesting facts at
www.bbraun-dialysis.com.**

For easy access, scan the QR code with your mobile device.