

## *Kidney Health Information*

# *Haemodialysis*

### **What is haemodialysis?**

As a patient approaching kidney failure who will require some form of artificial kidney treatment, it is important that you are gradually introduced to the concept of dialysis. This will be a major change in your life. Unfortunately, all too often patients who are diagnosed with kidney failure require urgent or emergency dialysis, before they have had an opportunity to learn about dialysis itself and the different methods of treatment available.

All patients, and ideally their close relatives, should be informed about the choice of treatment of either haemodialysis or peritoneal dialysis (chronic intermittent haemodialysis; CAPD – continuous ambulatory peritoneal dialysis; or APD – automated peritoneal dialysis). You should also be told about the advantages and disadvantages of these treatments for each individual, and about the possibility of potential transplantation – cadaveric, live related or non-related donor.

## **How do I choose my dialysis?**

In many units, patients approaching established renal failure are usually referred to the Community Dialysis Sister who would visit you in hospital, in the outpatient clinic or, preferably, in your own home to discuss the subject of dialysis.

You and your family are invited to a meeting to hear presentations about the modes of renal replacement therapy with possible contributions from the Community Dialysis Sister, haemodialysis and CAPD nurses, dietician, social worker, pharmacist and counsellor, as well as from patients undergoing both types of treatment. If necessary, you may be seen again in your own home to discuss the subject of dialysis further. Many patients choose to attend the sessions more than once.

The amount of information given depends on the needs and requests of the individual patient.

## **What is haemodialysis?**

Haemodialysis is a proven method of removing waste products and extra fluid, which build up in the blood when the kidneys are no longer able to function properly. To accomplish haemodialysis it is necessary to have easy access to the blood vessels. This is because treatment is required up to three times a week.

## What is a catheter?

Access can be achieved temporarily by placing a catheter (artificial tube) in one of the large veins in the neck or in the groin to enable dialysis to be undertaken.

This method is not without problems, especially a tendency towards clotting (which renders the catheter ineffective) and the development of infection – requiring removal of the catheter and placement of a further catheter in another vein. There are patients for whom this form of access is their only “lifeline” and the catheters may, with careful handling, last months or even years. They are a little unsightly and restrictive, but most patients tolerate them well.

## And what is a fistula?

An alternative and more permanent means of access to your circulation is by means of a fistula (Figures 1a and 1b). In general, flow through the superficial veins of the body is somewhat slow and low in volume yet, for dialysis, at least 200ml of blood needs to be removed every minute for treatment. To achieve this, a fistula is constructed. A fistula is an artificially-formed link between an artery and a vein. As a vein

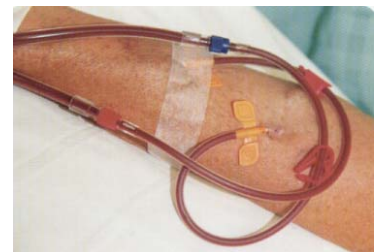


Fig.1a

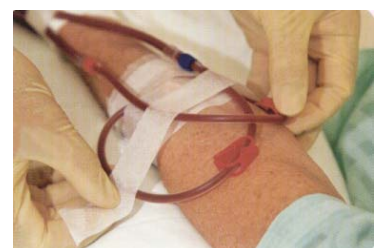


Fig.1b

is exposed to the higher pressure from the artery, the walls of the vein become thickened and more prominent and thus more capable of withstanding repeated puncture by needles.

### **How is a fistula created?**

The fistula is usually placed at the wrist or inner part of the elbow depending on the size of the blood vessels in the non-dominant arm (i.e. left if you are right handed) so that when dialysis is undertaken you have the ability to perform other activities.

The construction of the fistula is undertaken in an operating theatre, usually under local anaesthetic. However, there are occasions when you may require a general anaesthetic. After the fistula has been constructed it begins to mature. This usually takes between six and eight weeks depending on the initial size of the blood vessels. Even before the fistula becomes usable, the rush of blood through its new path can be felt. This sensation is called a “thrill”. It is a rippling or buzzing sensation that is felt when the soft pads of the fingers are placed over the skin. The fistula should be felt daily and if there is no thrill you should immediately contact the renal unit.

## How does it work?

The fistula is used for haemodialysis by placing two needles in different places. Needling of the fistula may be painful. To lessen the discomfort, local anaesthetic is used to numb the area where the dialysis needles are inserted. Most describe the sensation of the local anaesthetic inserted with a fine needle is a “stinging” or “burning” sensation which lasts only a couple of seconds. After that it usually does not hurt at all. If you have a severe needle phobia an anaesthetic ointment can be placed over the fistula needle site a few hours before treatment to help alleviate some of the fear and pain.

Following insertion of the needles, special tubing is attached, which is then connected to the artificial kidney. Blood flows out of the fistula through one needle to the artificial kidney and then back to the fistula through another tube and needle.

You need to sit or lie down while you are attached to the machine for treatment, but you may read, sleep, eat or watch television as you wish.

During dialysis there is no abnormal sensation. Many patients ask whether they will be aware of the blood outside the body but the answer is “no” – the amount of blood in the kidney and tubing is minimal.

## **How do I take care of my fistula?**

There are important guidelines you must follow:

- Do not allow your blood pressure to be measured on your fistula arm
- Do not allow blood to be drawn or a drip installed in the fistula arm
- Do not wear a watch or tight clothing with elastic or restrictive bands on the fistula arm
- Do not sleep on top of the fistula arm
- Be careful when using any sharp object or equipment

With proper care and attention a fistula can last for many years and is one of the safest forms of access.

## **How often is haemodialysis treatment required?**

Ideally, treatment should be undertaken three times a week for approximately three to four hours. Often when you first start dialysis you may have a small amount of your own kidney function still working (albeit insufficient to keep you well without dialysis). If so, treatment may be undertaken less often, but will usually be required more frequently in time. From time to time various blood tests are taken to determine whether the frequency and duration of treatment are adequate and adjustments may be made on the basis of these measurements. Every effort is made to ensure that your dialysis treatment is individually tailored to your needs.

## **Is there a special diet?**

Most patients on haemodialysis need to adjust their diet. The major change in diet is usually a reduction in foods high in potassium, phosphate and sodium (salt). The dietician will give you individual guidance about how to achieve your dietary needs. Assessment of dietary intake, especially protein, is monitored from time to time to ensure an adequate protein and calorie intake, which is an important part of maintaining a good quality of life and good health. However, if you are overweight, an attempt to achieve an ideal body weight may be undertaken working within the restrictions of a renal diet.

One of the major restrictions that you may find difficult is your fluid intake. In the early stages of haemodialysis you may still pass some urine but, as time progresses the volume will decrease. In between dialysis sessions fluid tends to accumulate, causing ankle swelling and, if severe, shortness of breath. Over prolonged periods this is not beneficial to your well-being. Fluid intake is assessed for each individual patient. However, in general, the rough guide for fluid intake is half a litre (500ml) of fluid on top of the volume of urine that is passed on a daily basis.

Urine measurements will be made from time to time to assess your fluid allowance. When and if changes are required, the dietician or renal nurse will discuss these with you.

## **What are the advantages of haemodialysis compared to peritoneal dialysis?**

1. Treatment takes place at the hospital and is carried out by trained nursing staff. Patients feel safe in the knowledge that the responsibility of their dialysis is undertaken by someone else. This is often an attractive proposition, especially for the elderly patient.
2. No treatment between sessions. As haemodialysis only takes place up to three times each week for three to four hours on each occasion, the intervening days allow a certain amount of freedom when normal activities can take place.
3. Low risk of infection.

## **And what are the disadvantages?**

1. Travelling back and forth to hospital up to three times a week on designated days can be tiring
2. The need for particular care with diet and fluid restriction, as dialysis only takes place intermittently
3. Needle phobia. For some, the thought of having injections several times a week can be quite daunting. However, this is hopefully reduced by the use of local anaesthetics
4. Body image. As a result of repeated needling, fistulas can become enlarged after a while and, for some, unsightly

5. Holidays. Holidays take some organising – but all the more so for a renal patient. Dialysis has to continue, so a unit has to be found which is willing to dialyse you. Many UK units find it difficult to offer holiday dialysis facilities, but visits to purpose-built holiday dialysis facilities in other European countries can often be arranged

### **What about medication?**

Alongside diet and dialysis, most patients will need to take a number of medicines. Before dialysis starts, you may be taking prescribed medications such as antihypertensive therapy (to lower your blood pressure) and diuretics (to encourage your kidneys to produce more urine). Tablets known as “phosphate binders” help to prevent you absorbing too much phosphate from your diet when taken before meals. The kidneys help us to use vitamins properly to keep our bones healthy, and you may need to take supplements of vitamin D or calcium. Many patients will receive injections with the hormone erythropoietin. This hormone is produced by healthy kidneys and helps to prevent anaemia. *However, as with the diet, your medication is individualised.*

## **How will my work and personal life be affected?**

In the initial stages of starting treatment, a certain period of adjustment is needed as many changes are taking place. Either before treatment or once your treatment has begun, the renal social worker will be available to discuss with you how dialysis may affect various areas of your life – for example, work, finances, social and personal relationships.

If necessary, the social worker and Community Dialysis Sister will (with your permission) talk to your employer about your treatment to help to alleviate any concerns you or your employer may have. The dialysis unit will do all they can to arrange your treatment times so that they can fit in with your work schedules.

Any financial worries you may have can also be discussed and, where applicable, you may be able to apply for certain benefits, such as mobility and disability living allowances. The renal social worker also has access to certain kidney patient organisations, which can provide assistance or act as a support group for you and your family.

Dialysis places a considerable strain on personal relationships, often making communication difficult between patients and their partners. This in turn may have a knock-on effect on those around you. The renal counsellor is there to listen to your anxieties and to try to bring about an understanding of these feelings, reinforcing that it is perfectly normal to feel this way.

## **What are the long-term considerations?**

Many find that travelling to a dialysis centre is both inconvenient and time-consuming. An alternative is to have a dialysis machine at home. In certain areas this is an option. Usually after a suitable period of training for both the patient and their helper (spouse, relative or friend) and adaptations of home arrangements, dialysis can be undertaken. It provides an opportunity for those in full employment, or those travelling long distances, to dialyse at times most convenient for them. The patient therefore has more control of his / her treatment, and has more independence.

## **Should I consider transplantation?**

The possibility of transplantation will be discussed with you: it is an option for many, but not for everyone.

If you wish to proceed, a meeting is then arranged to see the transplant surgeon and co-ordinator from the centre where the transplant would eventually take place. This meeting allows the surgeon to assess you and to tell you about the procedure, as well as the advantages and disadvantages of transplantation and the possible likelihood of a live related or non-related donor. This information is reinforced by the transplant co-ordinator who will also invite you along to the transplant centre so you can familiarise yourself with the surroundings and meet a patient who has had a transplant. As with

dialysis treatment, your suitability for transplantation will be reviewed regularly.

There are obvious advantages to having a kidney transplant. If it is successful, haemodialysis is no longer required and many associated problems disappear – e.g. dietary restrictions, fluid overload and the general feelings of being unwell. However, kidney transplants do not come with guarantees and many fail after a period of time. Where this happens, dialysis is recommended.

Where transplantation fails, or is not an option, haemodialysis provides a safe and effective form of treatment. Although there are restrictions, the problems that lie ahead should hopefully be overcome with the support of family, friends, and medical, nursing and unit staff.

Developing a positive attitude while adjusting to the new situation will enable you to lead a fulfilling life. You control the dialysis, it does not control you.

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Kidney Research UK, Kings Chambers, Priestgate, Peterborough PE1 1FG

Kidney Health Information telephone number: 0845 300 1499

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Or email: [kidneyhealth@kidneyresearchuk.org](mailto:kidneyhealth@kidneyresearchuk.org)

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