

24. RENAL DIALYSIS

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24.2 Introduction

24.2.1 Two groups of people suffering from renal failure and undergoing dialysis treatment two or more times a week are "deemed" to satisfy one or more of the medical criteria for the middle rate care component of Disability Living Allowance or the lower rate of Attendance Allowance. These are:

- (i) Those undergoing a type of dialysis which normally requires the attendance or supervision of another person during the period of dialysis.
- (ii) Those who because of the particular circumstances of their case in fact require another person, during the period of dialysis, to attend in connection with their bodily functions or to supervise them in order to avoid substantial danger.

These people may have other care and mobility needs which also have to be taken into account when the overall needs are assessed.

24.3 General

24.3.1 Chronic renal failure may result from any progressive destructive condition affecting both kidneys. It can develop at any age. It usually develops slowly over months or years although it may develop very rapidly. It is only in the final stages when there is no useful renal function remaining that dialysis is used as treatment.

24.3.2 The condition causing the renal failure is not in itself important unless it has other effects that give rise to care and mobility needs. For example, diabetes mellitus [Chapter 17] and systemic lupus erythematosus (SLE) [Chapter 28] can cause chronic renal failure. However, the effects of renal failure are the same whatever the cause.

24.4 Types of Dialysis

24.4.1 The purpose of dialysis is to remove from the body those toxic substances that are normally removed by the kidneys. There are two basic types, haemodialysis and peritoneal dialysis. There are three types of peritoneal dialysis, intermittent peritoneal dialysis (IPD), continuous ambulatory peritoneal dialysis (CAPD) and continuous cycle peritoneal dialysis (CCPD). CCPD is also known as peritoneal rapid overnight dialysis (PROD).

24.4.2 In general, those undergoing haemodialysis and intermittent peritoneal dialysis will need attention or supervision during the period of dialysis although a small number of people do manage unaided. CAPD and CCPD are designed in such a way that an adult who is otherwise physically and mentally fit does not need assistance with the procedure and does not need supervision during the period of dialysis. For many adults, however, age or the presence of other disabilities mean that they do in fact need attention or supervision during the procedures. Children will also need attention and/or supervision during the periods of dialysis.

24.5 Haemodialysis

24.5.1 Modern management of renal failure would not be possible without the use of the artificial kidney which is used in three main situations:

- (i)** For temporary support of patients with the sudden onset of reversible renal failure (ie. renal function is expected to return to within a normal or acceptable range).
- (ii)** For regular long-term treatment of patients with irreversible renal failure, for whom the ultimate goal in most cases is a successful renal transplant.
- (iii)** A less common indication is for the removal of poisons from the body following, say, self-ingestion in attempts at suicide, or accidental overdose with certain drugs. For this indication the period of haemodialysis lasts only several days.

24.5.2 During haemodialysis (use of an artificial kidney) blood is usually taken from the body by an artificial connection between a vein and an artery near the person's wrist or in the forearm. This is called an arterio-venous fistula. The blood is directed out of the body through an exchange unit (ie. the dialyser or artificial kidney) where the blood is cleansed of toxic substances and those compounds which would normally be removed by a functioning kidney. After dialysis the blood is directed back into the body via the arterio-venous fistula in the forearm or wrist.

24.5.3 Blood is prevented from clotting in the tubes of the dialyser by the use of

the anticoagulant, heparin, which is given as a continuous infusion. It is also kept warm while outside the body and maintained within a narrow temperature range not very different from normal body temperature.

- 24.5.4** The length of the time the patient is kept on the dialyser (artificial kidney) varies with the patient's condition and type of machine used. The average is 4 hours.
- 24.5.5** During haemodialysis the person is immobile and dependent on others for his needs and requires monitoring for indications of the effectiveness of the treatment and signs of any complications. Changes in blood pressure are usually recorded regularly throughout the period of haemodialysis.
- 24.5.6** Because of rapid changes which can occur in blood pressure and in the movements of salts and/or water into and out of the body during dialysis, and the risks of danger these may pose, there is a reasonable need for continual supervision during the periods of haemodialysis.

24.6 Continuous Ambulatory Peritoneal Dialysis

- 24.6.1** Continuous ambulatory peritoneal dialysis (CAPD), first prescribed in 1976, has become an accepted alternative treatment for renal failure. An indwelling catheter is inserted through the abdominal wall. Through this fluid is run, left in the abdominal cavity for 4-8 hours, and then run out. The process is repeated on a continuous basis. Treatment is therefore continuous not sessional.
- 24.6.2** A bag of dialysis fluid, after being warmed to body temperature, is suspended from a hook and attached to the catheter. The patient sits down and the fluid is run in. When the bag is empty, the connecting tube is clamped and disconnected. The patient is then able to go about his normal activities. After 4 to 8 hours the patient reconnects the bag, removes the clamp from the tube and allows the fluid to run into the bag. Thereafter a new bag of dialysis fluid is attached and the cycle repeated. Connection and disconnection must be carried out using a meticulously aseptic (germ-free) technique to minimise the risk of peritonitis.

24.7 Continuous Cycle Peritoneal Dialysis (CCPD) and Peritoneal Rapid Overnight Dialysis (PROD)

- 24.7.1** Continuous cycle peritoneal dialysis is an alternative to CAPD. A machine is used to deliver a pre-set amount of warmed fluid via a catheter into the peritoneal cavity where it remains for a time, at the end of which it is automatically removed and replaced by a further volume of fluid. The process is continuous and silent. The machines used tend to alarm frequently for various reasons, eg. the catheter may be kinked or a "systems error" has occurred. When the machine alarms all results have to be recorded and the machine re-set.
- 24.7.2** The patient is connected to the machine using an aseptic technique and

dialysis takes place over 10-12 hours at night in the patient's bedroom. The patient loads the machine with bags of fluid before retiring, connects it to the indwelling abdominal catheter, disconnects it in the morning, both procedures being performed with a meticulous aseptic technique, and then disposes of the waste fluid down the domestic toilet.

24.8 Care Needs

24.8.1 As CAPD and CCPD are designed to be carried out by the affected individual alone, an adult who is otherwise physically and mentally fit should not require attention or supervision to complete the process. Supervision should not be needed on account of the risk of an attack of peritonitis because, although this requires immediate medical attention, there is sufficient warning for the person himself to summon medical help.

24.8.2 In the many cases complicated by extremes of age, blindness, mental impairment, or severe physical weakness preventing the lifting of the bags of fluid it is unlikely that the affected individual will be able to complete the process without a great deal of help. In these cases, the complicating condition as well as the dialysis will have an effect on the overall care and mobility needs.

24.8.3 The occurrence of the following disabilities in those undergoing CAPD or CCPD will likely require assistance from another one or more times a day:

- (i)** Severe physical weakness from any cause (eg. anaemia, which is common in renal failure); help will be needed with the lifting of the bags, which are heavy.
- (ii)** Blindness: the bags must be checked to make sure they are clear. Clouding may be a sign of infection or fibrin formation. The latter can block the connecting tubes and is dealt with by an injection of heparin into the bag.
- (iii)** Loss of manual dexterity: the changes of the bags needs considerable manual dexterity and must be carried out under meticulous aseptic conditions. The function of the hands is very important. Persons with moderate to severe arthritis of the hands (eg. rheumatoid arthritis) may well not be able to perform the actions without the assistance of another person.
- (iv)** Extremes of age: the very young and the very old may well need assistance with the changing of the bags.

24.8.4 Night attention is not normally needed on account of dialysis alone as the dialysing fluid is left in the abdominal cavity overnight, changes taking place during the day.

24.9 Mobility Considerations

24.9.1 Those doing well on dialysis should be able to walk.

24.10 Duration of Need

24.10.1 Chronic renal failure is irreversible. In its late stages its effects are alleviated only by dialysis or by renal transplantation. For those starting on haemodialysis, the needs are likely to continue unchanged unless a transplant takes place. For those on CAPD or CCPD who need assistance because of other problems, the duration of need will depend on the outlook for the other cause of the disability.

24.11 Renal Transplantation

24.11.1 In the majority of instances following a transplant there is a return of normal renal function. This is usually immediate but may take up to three weeks. This return of function leads to a rapid improvement in the person's condition. Following transplantation patients need frequent follow-up at hospital outpatients with regular blood testing. However they should not have any significant care or mobility needs.

24.11.2 The danger following transplantation is that the new kidney will be recognised by the person's immune system as foreign and be rejected. Acute rejection occurs 1-12 weeks after transplantation. This can be treated successfully with immunosuppressive drugs in many cases. Chronic rejection shows when there is a slow decline in renal function more than three months after transplantation. Treatment does not benefit this condition and a return to dialysis will be necessary whilst the person waits for another transplant. In most cases it will be known by three months after the transplant whether or not it has been successful and whether or not the person will need further dialysis.

24.11.3 At this stage, the person may still have other problems giving rise to care and mobility needs.

24.12 Further Evidence

24.12.1 All people on dialysis will be attending a hospital renal unit from whom any additional information may be obtained.