key points

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End stage renal disease (ESRD) can be defined as the requirement for kidney transplantation or dialysis therapy. In the UK in 2016, of the 63,162 people receiving renal replacement therapy 53% were renal transplant recipients, 41% were on haemodialysis and 6% were on peritoneal dialysis. The most common known causes of ESRD are diabetic nephropathy, glomerulonephritides, pyelonephritis, hypertension, polycystic kidney disease and renovascular disease.

Dialysis should be started when: symptoms of uraemia impact on day to day living; the need is indicated by biochemical measures or uncontrollable fluid overload or at an eGFR of 5-7 ml/min/1.73 m^2 in the absence of symptoms. The choice of dialysis modality is influenced by the individual's functional status, social circumstances and confidence.

In peritoneal dialysis solutes and water pass from the blood into the peritoneal fluid by diffusion and osmosis and the fluid is then drained via the catheter. Advantages include independence from hospital, flexibility, lack of requirement for vascular access and preservation of residual renal function.

With haemodialysis blood passes through a dialysis machine where a selectively permeable synthetic membrane separates it from the dialysis fluid. Solutes and water move from the blood into this fluid by diffusion and osmosis. Home haemodialysis enables patients to have longer and more frequent dialysis resulting in reduced dietary and fluid restrictions and a need for fewer additional antihypertensive medications.

Dialysis patients are a vulnerable cohort of patients with increased general and cardiovascular morbidity. They are also susceptible to infection and should receive an annual flu vaccination. Malnutrition from dialysis related nutritional losses, the catabolic effect of dialysis itself, and the often advanced age of those on dialysis has been shown to increase the risk of morbidity and mortality.

Dialysis catheters, grafts and arteriovenous fistulae can all become infected. Vascular access associated infections can be particularly serious and lead to dissemination of infection (e.g. endocarditis, discitis, osteomyelitis). One in five of these cases are fatal. Pyrexia and rigors are highly predictive of positive blood cultures in dialysis patients with tunnelled dialysis catheters. Any suspicion of infection related to dialysis access should be discussed urgently with the dialysis team. Infection of peritoneal dialysis catheters is associated with the development of peritoneal dialysis peritonitis. If identified early, it is often possible to manage this without removing the catheter allowing the patient to remain on peritoneal dialysis. The International Society of Peritoneal Dialysis recommends antifungal prophylaxis in all peritoneal dialysis patients who receive a course of antibiotics.