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Patient education: Dialysis or kidney transplantation — which is right for me? (Beyond the Basics)

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INTRODUCTION

Dialysis and kidney transplantation are treatments for severe kidney failure, also called kidney (or renal) failure, stage 5 chronic kidney disease, and end-stage kidney (or renal) disease. There are two types of dialysis: hemodialysis and peritoneal dialysis.

When the kidneys are no longer working effectively, waste products, electrolytes, and fluid build-up in the blood. Dialysis takes over a portion of the function of the failing kidneys to remove the fluid and waste products. Kidney transplantation can even more completely take over the function of the failing kidneys.

This article discusses these therapies, including the advantages, disadvantages, and care required for kidney transplantation and dialysis. You and your family should discuss all of the options with your healthcare provider to make an informed decision.

WHEN WILL DIALYSIS OR KIDNEY TRANSPLANTATION BE NEEDED?

As the kidneys lose their ability to function, fluid, waste products, and electrolytes begin to build up in the blood. A kidney transplant should be performed or dialysis should begin before kidney disease has advanced to the point where life-threatening complications occur. This usually takes many months or years after kidney disease is first discovered, although sometimes severe kidney failure is discovered for the first time in people who were not previously known to have kidney disease. (See ["Patient education: Chronic kidney disease \(Beyond the Basics\)".](#))

If you have advanced kidney disease and you plan to start dialysis, it is best to begin dialysis treatments while you still feel well and have only mild symptoms of kidney failure. Such symptoms include nausea, loss of appetite, loss of energy, vomiting, difficulty concentrating, and others. You and your doctor will decide when to begin dialysis after considering a number of factors, including your kidney function (as measured by blood and urine tests), overall health, and personal preferences. Most patients will have symptoms of kidney failure and thus generally plan to start dialysis when their kidney function is approximately 5 to 10 percent of normal.

KIDNEY TRANSPLANTATION

Kidney transplantation is considered the treatment of choice for many people with severe chronic kidney disease because quality of life and survival (life expectancy) are often better than in people who are treated with dialysis. However, there is a shortage of organs available for donation. Many people who are candidates for kidney transplantation are put on a transplant waiting list and require dialysis until a kidney is available.

A kidney can be transplanted from a relative, an unrelated person (such as a spouse or friend), or from a person who has died (deceased or cadaver donor); only one kidney is required to survive. In general, organs from living donors function better and for longer periods of time than those from donors who are deceased.

Some people with kidney failure are not candidates for a kidney transplant. Older age and severe heart or vascular disease may mean that it is safer to be treated with dialysis rather than undergo kidney transplantation. Other conditions that might prevent a person from being eligible for kidney transplantation include:

- Active or recently treated cancer
- A chronic illness that could lead to death within a few years
- Dementia
- Poorly controlled mental illness
- Severe obesity (a body mass index greater than 40) ([calculator 1](#) and [calculator 2](#))
- Inability to remember to take medications

- Current drug or alcohol abuse
- History of poor compliance with medications or dialysis treatments
- Limited or no health insurance

Some people with human immunodeficiency virus (HIV) infection may be eligible for kidney transplantation if their disease is well controlled.

People with other medical conditions are evaluated on a case-by-case basis to determine if kidney transplantation is an option.

Advantages — Kidney transplantation is the treatment of choice for many people with end-stage kidney disease. A successful kidney transplant can improve your quality of life and reduce your risk of dying. In addition, people who undergo kidney transplantation do not require hours of dialysis treatment. Ideally, patients who are eligible to get a kidney transplant do so before ever starting on dialysis.

Disadvantages — Kidney transplantation is a major surgical procedure that has risks both during and after the surgery. The risks of the surgery include infection, bleeding, and damage to the surrounding organs. Even death can occur, although this is very rare.

After kidney transplantation, you will be required to take medications and have frequent monitoring to minimize the chance of organ rejection; this must continue for your entire lifetime. The medications can have significant side effects, including increased risk of severe infections, diabetes, and some cancers.

HEMODIALYSIS

In hemodialysis, your blood is pumped through a dialysis machine to remove waste products and excess fluids. You are connected to the dialysis machine using a surgically created path called a vascular access, also known as a fistula or graft. Sometimes, a catheter inserted into a large vein in the neck is used for hemodialysis treatments, although it is better to have a fistula or graft. This allows blood to be removed from the body, circulate through the dialysis machine, and then return to the body.

Hemodialysis can be done at a dialysis center or at home. When done in a center, it is most commonly done three times a week and takes between three and five hours per session. In-center hemodialysis can also be done with an overnight treatment three times per week. Home dialysis is generally done three to six times per week and takes between 3 and 10 hours per session (sometimes while sleeping). More detailed information about hemodialysis is available separately. (See "[Patient education: Hemodialysis \(Beyond the Basics\)](#)".)

Advantages — Hemodialysis generally requires relatively few hours of treatment per day and does not usually include treatments every day. In-center hemodialysis does not require patients to learn much about the dialysis procedure itself, and a nurse or patient care technician takes care of getting access to the blood stream for treatments.

Disadvantages — Low blood pressure during treatments is the most common complication of hemodialysis and can be accompanied by lightheadedness, shortness of breath, abdominal cramps, nausea, or vomiting. Treatments and preventive measures are available for these potential problems. In addition, the access can cause a blood stream infection or get clogged up and need surgery or other procedures to open it up.

Many patients who receive hemodialysis in a center are either unable to work or choose not to work due to the time required for travel and the dialysis treatments. Sometimes, nighttime overnight hemodialysis treatments in a dialysis facility may make it easier to both work and have hemodialysis.

PERITONEAL DIALYSIS

Peritoneal dialysis is typically done at home. To perform peritoneal dialysis, the abdominal cavity is filled with dialysis fluid (called dialysate) through a catheter (a flexible tube). The catheter is surgically inserted into the abdomen near the umbilicus (belly button). (See ["Patient education: Peritoneal dialysis \(Beyond the Basics\)"](#).)

The fluid is held within the abdomen for a prescribed period of time (called a dwell), usually several hours. The lining of the abdominal cavity (the peritoneal lining) acts as a membrane to allow excess fluids and waste products to diffuse from the bloodstream into the dialysate. The used dialysate in the abdomen is then drained out and discarded. The abdominal cavity is then filled again with fresh dialysate solution. This process is called an exchange.

Peritoneal dialysis treatments may be done by hand four to five times during the day or by using a machine (called a cycler) while you sleep. Some people use a cycler at night and also do one or two exchanges during the day.

Advantages — Advantages of peritoneal dialysis compared with hemodialysis include more uninterrupted time for work, family, and social activities. Many people who use peritoneal dialysis are able to continue working, at least part time, especially if exchanges are done during sleep.

Disadvantages — People who use peritoneal dialysis must be able to understand how to set the equipment up and use their hands to connect and disconnect small tubes. If you cannot do this, a family or household member may be able to do it.

Disadvantages of peritoneal dialysis include an increased risk of hernia (weakening of the abdominal muscles) from the pressure of the fluid inside the abdominal cavity. In addition, you can gain weight, and you have an increased risk of infection at the catheter site or inside the abdomen (peritonitis), although this is quite rare.

WHICH THERAPY IS BEST FOR ME?

Kidney transplantation is the optimal treatment for most patients who do not have one of the reasons to be ineligible for transplant that were mentioned above (see ['Kidney transplantation'](#) above).

Patients who are not candidates for kidney transplantation or who must wait for a kidney can usually be treated with either hemodialysis or peritoneal dialysis.

Choosing between peritoneal dialysis and hemodialysis is a complex decision that is best made by you, your doctor, and often other family members or caregivers after careful consideration of a number of important factors. It seems that neither hemodialysis nor peritoneal dialysis have clear advantages over the other in terms of survival. The choice between the two types of dialysis is generally based upon other factors, including your preferences, home supports, and underlying medical problems. You should begin with the type of dialysis that you and your doctors think is best, although it is possible to switch to another type as circumstances and preferences change.

For example, hemodialysis involves rapid changes of the fluid balance in the body and cannot be tolerated by some patients. Some patients are not suitable candidates for kidney transplantation, while others may not have the home supports or abilities needed to do peritoneal dialysis. Your overall medical condition, personal preferences, and home situation are among the many factors that should be considered. It is possible to switch from one type of dialysis to the other if preferences or conditions change over time.

NOT STARTING DIALYSIS

Some people choose not to start dialysis at all. You and your family should discuss the risks and benefits of long-term dialysis with your doctors.

Most people with kidney disease who have no or few other chronic illnesses are encouraged to start dialysis or get a kidney transplant; the chance of having a high quality of life for an extended period of time is usually excellent. However, you may have compelling reasons for electing not to start dialysis; this is often due to advanced age and having other medical conditions that might limit long-term life expectancy that would not be prolonged by starting dialysis. Try to feel comfortable discussing your wishes with your family and healthcare team with the goals of death with dignity and life with quality.

WHERE TO GET MORE INFORMATION

Your healthcare provider is the best source of information for questions and concerns related to your medical problem.

This article will be updated as needed on our website (www.uptodate.com/patients). Related topics for patients, as well as selected articles written for healthcare professionals, are also available. Some of the most relevant are listed below.

Patient level information — UpToDate offers two types of patient education materials.

The Basics — The Basics patient education pieces answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials.

[Patient education: Chronic kidney disease \(The Basics\)](#)

[Patient education: Polycystic kidney disease \(The Basics\)](#)

[Patient education: Hemodialysis \(The Basics\)](#)

[Patient education: Preparing for hemodialysis \(The Basics\)](#)

[Patient education: Peritoneal dialysis \(The Basics\)](#)

[Patient education: Choosing between dialysis and kidney transplant \(The Basics\)](#)

[Patient education: Planning for a kidney transplant \(The Basics\)](#)

Beyond the Basics — Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are best for patients who want in-depth information and are comfortable with some medical jargon.

[Patient education: Hemodialysis \(Beyond the Basics\)](#)

[Patient education: Chronic kidney disease \(Beyond the Basics\)](#)

[Patient education: Peritoneal dialysis \(Beyond the Basics\)](#)

Professional level information — Professional level articles are designed to keep doctors and other health professionals up-to-date on the latest medical findings. These articles are thorough, long, and complex, and they contain multiple references to the research on which they are based. Professional level articles are best for people who are comfortable with a lot of medical terminology and who want to read the same materials their doctors are reading.

[Prescribing peritoneal dialysis](#)

[Evaluating patients for chronic peritoneal dialysis and selection of modality](#)

[Dialysis modality and patient outcome](#)

[Evaluation of the living kidney donor candidate](#)

[Evaluation of the potential kidney transplant recipient](#)

[HLA desensitization in kidney transplantation](#)

[HLA matching and outcomes in kidney transplantation](#)

[Indications for initiation of dialysis in chronic kidney disease](#)

[Prescribing and assessing adequate hemodialysis](#)

[Patient survival after kidney transplantation \(adults\)](#)

[Renal replacement therapy \(dialysis\) in acute kidney injury in adults: Indications, timing, and dialysis dose](#)

[Renal transplantation and the older adult patient](#)

[Kidney transplantation in HIV-infected individuals](#)

The following organizations also provide reliable health information.

- National Library of Medicine

(www.nlm.nih.gov/medlineplus/healthtopics.html)

- National Institute of Diabetes and Digestive and Kidney Diseases

(www.niddk.nih.gov)

- National Kidney Foundation

(800) 922-9010

(www.kidney.org)

- United Network for Organ Sharing (UNOS)

(888) 894-6361

(www.unos.org)

- American Kidney Fund

(www.kidneyfund.org/)

- Home Dialysis Central

(www.homedialysiscentral.org)

- Kidney School

(www.kidneyschool.org)

REFERENCES

1. [National Kidney Foundation. K/DOQI clinical practice guidelines for chronic kidney disease: evaluation, classification, and stratification. Am J Kidney Dis 2002; 39:S1.](#)
2. [Galla JH. Clinical practice guideline on shared decision-making in the appropriate initiation of and withdrawal from dialysis. The Renal Physicians Association and the American Society of Nephrology. J Am Soc Nephrol 2000; 11:1340.](#)
3. [Williams AW, Chebrolu SB, Ing TS, et al. Early clinical, quality-of-life, and biochemical changes of "daily hemodialysis" \(6 dialyses per week\). Am J Kidney Dis 2004; 43:90.](#)

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Contributor Disclosures

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