

# At-Home Dialysis: Consider the Advantages

About 400,000 Americans have end-stage kidney disease, in which the kidneys are working at 10% or less of their capacity. The only “cure” for the condition, which is usually caused by diabetes or hypertension, is a kidney transplant. But since donor kidneys are in short supply, most patients must resort to dialysis, a treatment that takes over many of the kidneys’ functions—especially removing wastes and excess fluids from the blood. Through dialysis, people with end-stage kidney disease not only can survive, but also often enjoy normal active lives.

Most of those who need kidney dialysis choose hemodialysis, which requires getting to a dialysis center three times a week and remaining tethered to an artificial kidney machine for several hours. But there is a less-used alternative that more people should consider: peritoneal dialysis, which can be done at home.

“Conventional wisdom has been that peritoneal dialysis offers people more freedom, and that people who choose this option have a greater sense of well-being,” says Neil R. Powe, M.D., a Johns Hopkins professor of medicine. Now, a study that Dr. Powe and his colleagues published in the *Journal of the American Medical Association* earlier this year finds that people who choose peritoneal dialysis are 50% more likely than those who choose hemodialysis to rate their overall care as excellent.

## DIALYSIS AT A CENTER

Unfortunately, a lot of people are unfamiliar with peritoneal dialysis, and consequently use of the technique has actually decreased. The reasons for this are unclear, but physicians may recommend hemodialysis simply because they’re more familiar with it. Another reason may be tied to the need for dialysis centers to recoup resources

invested in building facilities. In any case, more than 90% of patients receive hemodialysis—a procedure typically performed in a dialysis center by nurses and technicians. (A form of home hemodialysis is available but is rarely used because it requires considerable medical expertise and the purchase of expensive equipment.)

Before hemodialysis can begin, a doctor must establish access to the bloodstream via either a fistula or a graft. A fistula is created by surgically connecting an artery to a vein, usually in the forearm; a graft is created by surgically implanting a plastic tube under the skin to join an artery and vein. During hemodialysis, the patient is connected to an artificial kidney machine (dialyzer), blood is diverted from an artery into the dialyzer and filtered, and the cleansed blood is then returned into the bloodstream through a vein.

Each session takes 3 to 5 hours, and patients usually require three sessions per week. Except for the discomfort of the needle insertions, the procedure is generally painless. The arm needs to be extended if access is through the arm, but patients can read, sleep, watch television, or talk while undergoing hemodialysis.

Side effects of hemodialysis can include a drop in blood pressure, vomiting, an upset stomach, muscle cramps, and fatigue. Often, patients can avoid these side effects by following a special diet, provided by dietitians at the dialysis center, along with additional instructions.

## USING YOUR BODY AS A FILTER

Rather than using an artificial kidney, peritoneal dialysis employs the lining of the abdomen (peritoneal membrane) as a filter.

The first step in peritoneal dialysis is for a doctor to surgically implant a catheter in the abdomen, which

allows dialysis solution, called dialysate, to pass into the abdominal cavity. The dialysate draws wastes and excess fluid from the blood through the peritoneal membrane via osmosis. Then, the used dialysis solution is drained through the catheter, discarded, and replaced with new solution.

The process of draining and filling the abdominal cavity takes about 30 to 40 minutes and is called an exchange; the period during which the dialysis solution remains in the abdominal cavity is longer and is called the dwell time.

## WITH OR WITHOUT A MACHINE

There are two basic methods of peritoneal dialysis, both usually done by patients on their own at home. The first, continuous ambulatory peritoneal dialysis, uses no machines. It involves hanging a bag of dialysis solution on a special stand, sitting down, and allowing the solution to flow through a catheter into the abdomen. During the dwell time, which lasts about 4 hours, the person is able to carry out normal activities. Then the person must sit down again to allow the fluid to drain into a bag placed near the floor. Patients usually carry out three or four exchanges during the day, plus one before bedtime with a long dwell time to allow a full night’s sleep.

The second type of peritoneal dialysis requires a machine. Called automated or continuous cycler-assisted peritoneal dialysis, the procedure is performed at night while a patient is sleeping and attached to a cycler, a machine that exchanges dialysis solution through the catheter into the abdomen. The cycler usually performs 3 to 5 cycles lasting 1.5 hours each. In the morning, you begin an exchange with a dwell time that lasts all day.

Individuals who weigh more than 175 lbs. or who have a peritoneum that

*continued on page 7*


**Cholesterol** (continued from page 2)

combines 10 mg of ezetimibe with different dosages of simvastatin.

• **Colesevelam-statin.** Bile acid sequestrants partially prevent bile acid absorption from the intestine and cause the liver to convert more cholesterol into bile acids, thereby removing more LDL-C from the circulation. Older drugs in this category were difficult to take and caused many gastrointestinal side effects. A newer bile acid sequestrant, colesevelam, works more efficiently and thus can be administered in lower doses with fewer side effects. In a randomized controlled trial published in *Atherosclerosis* in 2001, patients given 10 mg/day of atorvastatin (Lipitor) alone experienced a 38% decrease in their LDL-C, while the addition of colesevelam to atorvastatin produced a 48% drop in LDL-C without any increase in adverse effects.

**ARE YOU REACHING YOUR GOAL?**

If your LDL-C still exceeds the recommended target despite optimal statin therapy, or if you are unable to tolerate higher doses of statins because of side effects, ask your doctor if combination therapy would be an appropriate option. Similarly, if your HDL cholesterol level is too low or your triglycerides too high, ask about adding niacin or a fibrate to your regimen.

“Many doctors now try to push LDL-C way down in high-risk asymptomatic patients,” says Dr. Blumenthal, “especially if tests have established they have a lot of plaque in their heart. At Hopkins, we are very aggressive about lowering LDL-C levels and would add ezetimibe if necessary. And if a patient’s HDL cholesterol or triglycerides are still suboptimal after treatment, we would probably add another drug to improve these levels.” 

**DRUGSTORE AISLE**

- ▶ Topiramate (Topamax), an anti-seizure drug, has been approved by the FDA for the **prevention of migraine headache** in adults. A recent study in the *Journal of the American Medical Association* showed that patients with a history of migraines who took 100 or 200 mg/day of topiramate had almost half as many migraine headaches as people taking a placebo. The drug is not approved for acute treatment of migraines.
- ▶ Do not drink **alcoholic beverages** while taking a drug unless your doctor says it’s safe to do so. According to the FDA, “of the 100 medicines most commonly prescribed, over half contain at least one substance that reacts badly with alcohol.”

**Dialysis** (continued from page 3)

filters waste slowly may require a combination of ambulatory and automated dialysis.

**WHICH METHOD TO CHOOSE**

When patients are fully informed about both options, about half of them choose hemodialysis and half choose peritoneal dialysis. Peritoneal dialysis is just as effective as hemodialysis, and possibly even more so—one small, randomized trial found that people on peritoneal dialysis lived longer than those on hemodialysis. Doctors will also recommend peritoneal dialysis to patients with blood pressure that fluctuates rapidly between high or normal blood pressure and low blood pressure because hemodialysis causes shifts in blood pressure.

You may prefer hemodialysis if you like the idea of receiving close supervision from medical personnel. The procedure also requires only three treatments per week. A major disad-


vantage is that you must get to a dialysis center for all of those treatments. In addition, if you travel anywhere, you will have to locate and schedule appointments at a dialysis center near your destination.

Peritoneal dialysis, on the other hand, can be done almost anywhere. After your initial training, you only need to visit a dialysis center for periodic check-ups. In addition, while both types of dialysis require patients to follow dietary restrictions, peritoneal dialysis has fewer restrictions.

The main disadvantages of peritoneal dialysis are that it must be performed every day, and patients aren’t monitored by a medical staff. Also, anyone using peritoneal dialysis is at risk for abdominal infection, but the risk can be reduced by carefully following your doctor’s instructions.

About 20% of people cannot elect peritoneal dialysis for medical reasons (for example, because of recent abdominal surgery or some abdomi-

nal hernias). Age is not an impediment to choosing peritoneal dialysis unless you lack the manual dexterity required to carry out the procedure or suffer from confusion. In fact, peritoneal dialysis might be a good choice for older people who are unable to drive and have a hard time getting to a dialysis center.

If you’ve been told that you need kidney dialysis, or if you’re already on dialysis and would like to reassess the method you’ve chosen, talk to your doctor about both options—and if possible, speak to people who are on both types of dialysis to get a clear sense of what the experience is like. 

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