

# UNDERSTANDING YOUR HEMODIALYSIS OPTIONS





American Association of Kidney Patients

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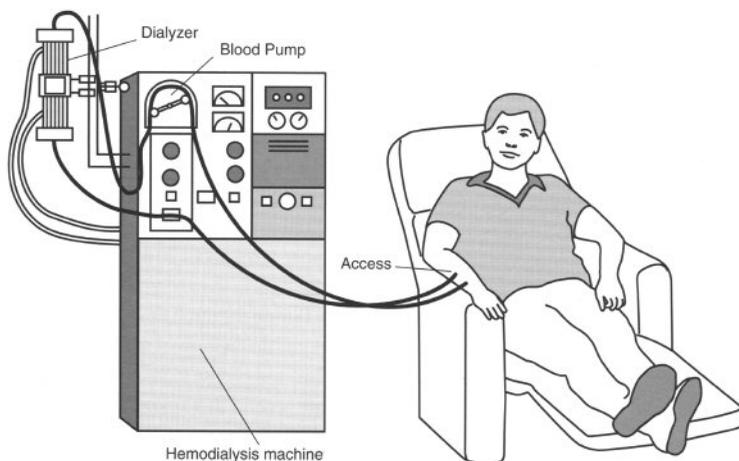
# Overview

**HEMODIALYSIS** is a medical procedure designed to remove wastes, toxins and fluids from the blood when the **kidneys** have failed. It is the most common treatment for **end-stage renal disease (ESRD)**, more commonly known as kidney failure. Doctors may recommend hemodialysis if your kidneys have failed and can no longer perform the function of removing waste and extra water from the blood to form urine.

Before beginning **dialysis**, doctors create an “**access**.” The access serves as a site, usually in the arm, where blood can be safely removed and returned to the body. The access site is often referred to as the “**lifeline**.” There are four access options: a fistula, a graft, a subcutaneous device or a catheter. Fistulas and grafts are permanent accesses. A permanent access involves the creation of a connection between an artery and a vein under the skin. These are used for patients with renal failure who are expected to need long-term dialysis treatment. The other types of access, catheters and subcutaneous devices, involve direct placement of a tube into a large vein in the neck, chest or groin. These are used for those who need short-term dialysis or those who are on long-term dialysis and no longer have a place to insert a fistula or graft. (Please refer to “Understanding Your Hemodialysis Access Options” brochure, which is available by calling AAKP at 800-749-2257.)

During each dialysis treatment, two needles are inserted into your access. Each needle is connected to a hollow plastic tube. The dialysis machine pumps blood from the body to the hemodialysis machine by way of a flexible, plastic tube. The blood is cleaned and returned to your body through a second tube and needle. (See picture below.)

During the procedure, fluids and waste products are removed from the blood before being returned to the body. The blood is cleaned by a part of the hemodialysis machine known as an artificial kidney or **dialyzer**, which filters the blood after it has entered the machine. The dialyzer does not completely replace your original kidney’s function.



Remember, your kidneys worked 24 hours a day, seven days a week.

It might look like there is a lot of blood outside your body. Actually, there is only about one cup of blood in the tubing and dialyzer at any time during the treatment. Just as people are not normally aware of blood moving through the body, you cannot feel blood being pumped out to the machine.

Dialysis machines have many gauges and alarms. You may find this overwhelming at first. The machine makes sure your treatment is safe by monitoring your venous pressure, how quickly your blood moves through the tubing and how much water is removed during the treatment.

Hemodialysis is a process that can be performed in a dialysis unit or at home. You will begin dialysis treatment in a center so your doctor can monitor your status and wait for your access to mature. There are three types of hemodialysis treatment: conventional hemodialysis, short daily hemodialysis and nocturnal (nightly) hemodialysis.

Conventional hemodialysis is usually performed at a dialysis facility or a hospital outpatient unit three or four times a week. This is the most common and available type of hemodialysis and what most people think of when they hear the term hemodialysis.

Another option for hemodialysis treatment is short daily hemodialysis. As the name implies, this type of treatment is used five to six times per week for a short amount of time, and is usually done at home.

The third type of hemodialysis is called nocturnal or nightly hemodialysis. This form of hemodialysis is performed during the night while you sleep, and is available in the home and in select centers.

Home therapies, including short daily and nocturnal, may not be available in all areas. You may have to do some research to locate a facility in which these treatments are available.

For all treatment options, if you are not being dialyzed well you might experience side effects such as headaches, nausea, vomiting or fatigue. AAKP offers a brochure, entitled "AAKP Hemodialysis Advisory." This brochure discusses the importance of adequate dialysis and how to know if you are receiving enough dialysis. For more information or to request a free copy, call AAKP 800-749-2257.

This brochure was created to explain your hemodialysis treatment options. It features a brief description of each kind of treatment, how you can find more information, common questions associated with each treatment and the benefits and drawbacks to each.

# CONVENTIONAL HEMODIALYSIS

Conventional hemodialysis is usually done three times per week. Each treatment is on average four hours in length. Your **nephrologist** prescribes the length of your treatment. The time you spend during each treatment depends on your body size, laboratory results and medical condition.

## IN-CENTER

In-center conventional hemodialysis or clinic hemodialysis is performed in an outpatient dialysis unit, usually three times a week. Many healthcare specialists will be involved or are in the facility during these treatments. These include dialysis **technicians**, doctors, dialysis **nurses** and a few others. Nurses and technicians who have special training place the access needles and tubing and monitor the machines. Most dialysis centers have technicians who help begin and end the dialysis treatment, monitor vital signs during the treatment, clean the equipment after each use, maintain the machine and order supplies. You also have the opportunity to interact with other patients experiencing the same treatment.

Every dialysis unit looks and runs differently, but there are some common elements you will find in almost every unit. For many people, it is helpful to tour a dialysis unit to see how it looks and sounds before beginning treatment. Most dialysis centers are designed as an open area with reclining chairs along the wall and a dialysis machine beside each chair. There are usually televisions in the center of the room or a small television at each chair.

An example of a fixed conventional hemodialysis schedule is, Monday, Wednesday and Friday from 9:00 a.m. to 1:00 p.m.

## PROS

- Facilities are widely available
- Trained professionals perform treatment for you
- You can interact with people who are on dialysis at the same time as you
- Treatments are a standardized three treatments per week, four days off
- You do not have to care for and store a machine or supplies
- Medical help is available quickly in an emergency

## CONS

- Staff who are not familiar with you may be working with you
- You must follow the rules of the dialysis center, such as number of visitors or eating restrictions
- You must travel to a center three times per week on a fixed schedule
- Treatment times are scheduled by the dialysis center

## HOME

Conventional hemodialysis may also be performed in your home. This treatment option requires help from a partner. In this setting, nurses and technicians train you and a partner on how to use a hemodialysis machine. Training generally lasts four to 12 weeks and is done while you are receiving treatments at the center. Each time you are treated during the training process, you and your partner will gradually take on more responsibility with the treatment. Once you, your partner and the training staff are confident in your abilities to manage dialysis at home, you can begin home hemodialysis.

You will need to choose a dependable partner. This person will need to be with you and assist you each time you dialyze. It is important for you to choose someone with whom you can work well. It needs to be someone who can stay calm and help you to solve problems when issues arise.

When you dialyze at home, you are in charge of many things the people in the dialysis center would do. You are responsible for setting up and preparing your machine for treatment. You will also have to clean the machine afterwards. You must make sure you have the needed equipment and supplies. After the treatment is finished, you are also responsible for cleaning up and disposing of the used supplies.

When dialysis is performed at home, your equipment and supplies are delivered to you. Sometimes the volume of supplies is quite large. You must have a home with adequate space for the equipment and storage of supplies. You will pay for the additional electricity and water required for dialysis. There must be suitable electrical outlets and plumbing to make the dialysis solution and to drain the machine. The home hemodialysis training program will check for these requirements. In some cases, changes may be made to your home's existing plumbing and electricity.

You and/or your partner will be trained to insert needles into your access for dialysis. You will be expected to give your own **erythropoietin** (EPO) injections, but you will go to the center for other IV injections and for a monthly check-up.

Even if you dialyze at home, you still have access to the same professional team as someone who dialyzes in a facility. There will be a training nurse available by telephone at all times who can answer questions, assist you in dealing with problems, arrange for technical support of the machine and advise you. It is also likely that a training nurse will visit you at home once a year to advise and observe hemodialysis sessions.

This treatment option may cause extra stress for your family members and/or helper who must be present during and sometimes assist with treatments. To prevent “burn out” of the family member or helper, it is important to focus on taking care of yourself. The home program can also arrange for you to dialyze in-center to allow time-off or vacation for your helper.

PROS	CONS
<ul style="list-style-type: none"><li>• Same person always helps you</li><li>• You decide if you want to have visitors or if you want to eat during dialysis</li><li>• More control over times to dialyze, within the number of hours and days ordered by your doctor</li><li>• No travel to dialysis clinic for treatment</li><li>• You have more control over your treatment and life, which allows you more independence</li><li>• You have access via the phone (or clinic appointment) to a nurse, <b>dietitian</b> and <b>social worker</b> to answer questions or to solve problems you may have with the hemodialysis treatment</li></ul>	<ul style="list-style-type: none"><li>• Not all facilities offer home hemodialysis</li><li>• You and your partner will need to be trained for several weeks for home hemodialysis</li><li>• Need room for storage of equipment and supplies</li><li>• Need to call paramedic for help in an emergency</li><li>• Trained helper or family member must be present to assist with treatments and emergencies</li><li>• Home must have required plumbing and electrical capabilities</li></ul>

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*“Home hemodialysis allows me to continue working, since I dialyze after I get home and on Saturdays.”*

**Tom**  
*Home Hemodialysis Patient*

# SHORT DAILY HEMODIALYSIS

Short daily hemodialysis is a term used to describe more frequent hemodialysis five or six days each week, leaving one or two off days when you do not dialyze. Since you will be receiving more frequent dialysis, your dialysis time per treatment will be less. For example, if you dialyzed three times per week for four hours each time on conventional hemodialysis, you might dialyze six times per week for two hours each time on short daily hemodialysis. Your doctor and health-care team will determine how many days and the length of treatment that is best for you.

More frequent hemodialysis lessens the amount of fluid that gathers in the body between treatments. Therefore, less fluid needs to be removed during the next treatment. This usually decreases symptoms often experienced both during and after conventional hemodialysis treatments, such as headache, nausea and vomiting, cramping, hypotension and post-dialysis fatigue. Since short daily hemodialysis matches normal kidney function more closely than conventional hemodialysis three times a week, you may feel and look better.

## PROS

- No travel to dialysis clinic for treatment
- Same person always helps you
- Shorter dialysis session
- More control over times to dialyze, within the number of hours and days ordered by your doctor
- You have more control over your treatment and life, which allow you more independence
- You may have fewer fluid and diet restrictions than conventional hemodialysis
- Closely resembles normal kidney function
- Better blood pressure control

## CONS

- You and your partner will need to be trained for several weeks for home hemodialysis
- Need room for storage of equipment and supplies
- Need to call paramedic for help in an emergency
- Trained helper or family member must be present to assist with treatments and emergencies
- Home must have required plumbing and electrical capabilities
- May have to use conventional hemodialysis when traveling

Fistulas, grafts and central venous catheters have all been used successfully in short daily hemodialysis patients. To date, it appears that problems such as access failure or infections do not occur more often than they do with dialysis three times a week.

When traveling, you may temporarily have to switch to conventional hemodialysis three times a week in a center. This allows you to travel in the same manner as if you were always on a conventional hemodialysis schedule. When you return home from your trip, you go back to your short daily hemodialysis schedule.

Short daily hemodialysis is generally offered as a home treatment option. If you are an in-center patient, you have the option to switch to short daily hemodialysis if it is available and with your doctor's approval. There are certain requirements for people who choose short daily hemodialysis. You will need a home helper (preferably a family member or close friend). The dialysis unit will help you get set up at home with your own dialysis machine and train you and your partner.

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*“I like dialyzing daily because my diet is more flexible than when I only dialyzed three times per week.”*

***Cindy***

***Short Daily Hemodialysis Patient***

# NOCTURNAL HEMODIALYSIS

Nocturnal hemodialysis is a form of hemodialysis that is performed while you sleep. It can be done in-center three times per week or at home five to seven times a week. Nocturnal or nightly hemodialysis can offer a very high dose of dialysis because it lasts for a long period of time. When it comes to toxins such as **urea**, it can offer results as effective as normal kidneys. Patients have reported feeling more energetic, having increased stamina, improved appetites and fewer spells of nausea. There are fewer complaints of itchy, dry skin or “restless leg syndrome.” Since dialysis takes place at night during sleeping hours, you can spend more of the daytime at work, leisure or recreation.

To prevent accidental disconnection of the dialysis tubing from the access during the night, the connections are reinforced with locking boxes and other safety devices.

When traveling, you may temporarily have to switch to conventional hemodialysis three times a week in-center. This allows you to travel in the same manner as if you were always on a conventional hemodialysis schedule. When you return home from your trip, you go back to your nocturnal hemodialysis schedule.

## IN-CENTER

Nocturnal hemodialysis can be performed in a dialysis center or hospital unit. Most treatments are three nights a week and last about eight hours. Your doctor will determine the length of treatment that is right for you.

During the dialysis time, you will be in a bed. The unit is in “sleep mode” with the lights off. Nurses and technicians start and end your treatment and observe you

## PROS

- Trained professionals perform treatment for you
- You can interact with other people on dialysis at the same time as you
- Treatments are a standardized three treatments per week, four days off
- Medical help is available quickly in an emergency
- Better blood pressure control
- You may have fewer dietary and fluid restrictions than conventional hemodialysis

## CONS

- Potential for accidental disconnection of the dialysis tubing during the night
- You must follow the rules of the dialysis center such as number of visitors or eating restrictions during treatment
- Travel to center on a fixed schedule
- Treatments are scheduled by the dialysis center
- May have to use conventional hemodialysis when traveling

while you sleep. Dialysis technicians look after the machine and service aides help in the unit. The dialysis technicians connect your access to the dialysis machine with a secure line that sounds an alarm if it senses any wetness around your access.

It may take time for you to get used to the noises made by the dialysis machine, the nurses walking around and sleeping in the dialysis center.

## HOME

This treatment is performed five to seven nights a week. The length of the dialysis varies. It can last as long as you want to sleep, anywhere from five to 12 hours, with eight hours being the average. The dialysis treatments take place in your home, eliminating the need to travel to a center to dialyze. All requirements of other home options apply as well.

In some locations trained hospital staff monitors the dialysis machine by telephone modem or the Internet. A member of the dialysis team can observe each stage of your dialysis treatment and is able to evaluate pressures, flows, fluid removal and alarms. The machine will occasionally alert you to any problems. If you do not respond within a reasonable period, the hospital monitor will contact you by phone. You have access via the phone (or clinic appointment) to a nurse, dietitian and social worker to answer questions or to solve problems you may have with the dialysis treatment.

For more information on training you and your partner for nocturnal home hemodialysis, refer to the conventional home hemodialysis section.

## PROS

- No travel to clinic for treatment
- You have more control over your treatment and life, which allows you more independence
- Same person always helps you
- More frequent dialysis closely resembles normal kidney function
- You may have fewer dietary and fluid restrictions than conventional hemodialysis
- Better blood pressure control

## CONS

- Some modifications to plumbing and electrical supply in the home may be required
- May have to use conventional hemodialysis when traveling
- Requires training and you must have trained partner to help you
- Need room for storage of equipment and supplies
- Need to call paramedic for help in an emergency
- Trained helper or family member must be present to assist with treatments and emergencies
- Potential for disconnection

# IN CONCLUSION

**IN CONCLUSION**, this brochure was developed by the American Association of Kidney Patients (AAKP) to help patients and their family members with their physicians make educated and informed decisions about the type of treatment available. If you are interested in changing your present treatment, talk to your nephrologist and/or dialysis unit staff.

**In evaluating hemodialysis options, please keep in mind:**

- 1. Every patient is unique.**
- 2. Each will have different outcomes and experiences with treatments.**
- 3. Almost all new patients start on conventional in-center hemodialysis.**
- 4. Not all treatment types may be available in all areas; and**
- 5. Some treatment types may not be an option for you.**

With the recent introductions of short daily and nocturnal hemodialysis in the United States, patients have more treatment choices than ever. We hope you found this brochure helpful in explaining your hemodialysis treatment options and remember to talk to your doctor if you have additional questions.

# Glossary

**Access:** General term used to describe the site where the needles for the hemodialysis process are connected to your body

**Dialysis:** The process of cleaning wastes from the blood artificially. See also hemodialysis.

**Dialyzer:** A part of the hemodialysis machine that removes wastes and extra fluid from the blood.

**Dietitian:** The renal dietitian can help you make good food choices and understand your blood chemistry results.

**End-stage renal disease (ESRD):** Total chronic kidney failure. When the kidneys fail, the body retains fluid and harmful wastes build up. A person with ESRD needs treatment to replace the work of the failed kidneys.

**Erythropoietin (EPO):** A hormone that working kidneys produce that tells the body to make red blood cells. Lack of EPO leads to anemia.

**Hemodialysis:** The use of a machine to clean wastes from the blood after the kidneys have failed. The blood travels through tubes to a dialyzer, which removes wastes and extra fluid. The cleaned blood then flows through another set of tubes back into the body.

**Kidneys:** The two-bean shaped organs that filter waste from the blood. The kidneys are located near the middle of the back.

**Nephrologist:** A doctor who treats for kidney problems and related hypertension.

**Nurses:** A registered nurse (RN), a licensed practical nurse (LPN) or a nursing assistant (NA) are often the people who perform dialysis treatments or supervise technicians performing dialysis.

**Renal:** Relating to the kidneys.

**Social Worker:** A trained professional who can provide you with a great deal of information, from financial resources to emotional coping and support systems.

**Surgeon:** The doctor who creates your access.

**Technician:** A trained professional who helps begin and end your dialysis treatment, monitor your vital signs during treatment, maintain the machine, order supplies and clean the dialyzer after each use.

**Urea:** A waste product that the body makes when protein is broken down. Levels of urea in the blood are a measure of how well the dialysis treatment is working.

**Uremia:** When waste products that are normally removed by the kidneys build up in the blood, leading to symptoms such as poor appetite, nausea, vomiting, fatigue and inability to concentrate.



# AAKP Membership

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Please include my membership in  
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Please return completed form and payment to:

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3505 E. Frontage Rd., Suite 315  
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(800) 749-2257

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to assist AAKP with its many patient programs.

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## MEMBERSHIP BENEFITS

- A subscription to AAKP's magazine, *aakpRENALIFE*.
- An opportunity to subscribe to the *AAKP Renal Flash*, *Kidney Transplant Today*, *Kidney Beginnings: The Electronic Newsletter* and *AAKP Public Policy Briefing*, electronic newsletters transmitted once a month via e-mail.
- Access to the AAKP Web site ([www.aakp.org](http://www.aakp.org)) which displays useful healthcare information and provides links to other renal related sites.
- A membership packet filled with a wide range of informational brochures on issues affecting the care and treatment of kidney patients.
- Access to special interest brochures that address changing medical technology.
- Local chapters in your community (if available) that provide social and educational support to you and your family with meetings, newsletters and group activities.
- An opportunity to attend our annual convention, a four-day event featuring seminars addressing treatment options, rehabilitation, and psychological and social concerns of renal disease patients.

## HOW AAKP HELPS YOU AND YOUR FAMILY

- Assuring that your voice is heard and your interests are represented through actively defending the rights of kidney patients in Washington, D.C. and the renal community.
- Focusing on issues such as treatment options, adequacy of care, access to rehabilitation and employment and many other issues that address the needs of patients and their families.
- Encouraging the development of local patient and family support groups.
- Conducting patient conferences and seminars that help patients and their families deal with the medical, psychological and social concerns associated with kidney disease.

**aakp**

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