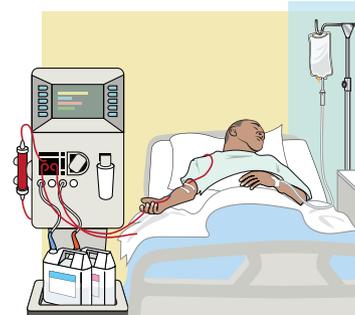


What is Hemodialysis for Acute Kidney Failure?

Hemodialysis is a life-supporting treatment used to help a person whose kidneys are not working properly. The person is connected to a dialysis machine and his or her blood flows into the machine. The machine washes the blood of waste and returns the blood back to the person. This fact sheet talks about the use of hemodialysis for acute kidney failure in the intensive care unit.



When is hemodialysis needed in the intensive care unit (ICU)?

The most common reason to start hemodialysis is kidney failure. The body normally has two kidneys that have several jobs: getting rid of waste and unneeded fluid, keeping salt and acid in the blood at the right levels, and getting rid of toxic chemicals in the blood. The kidneys can stop working for a number of reasons. Even if the kidneys still make some urine, they may not be doing their other tasks as well as is needed. This is called kidney (or renal) failure. If a person does not get hemodialysis when the kidneys fail, waste and toxins build up and poison the body. The person in kidney failure can fall into a deep sleep or coma and/or the heart can stop. Removal of waste and excess fluid from the body helps maintain one's life. In addition, sometimes hemodialysis is used to clear excessive medication or an overdosed drug from the body. Sometimes dialysis needs to be started in the hospital during an acute illness. With an acute illness, the kidneys may recover or may have permanent damage and never function well again. Other people who have had kidney disease for some time may be started on dialysis as an outpatient.

How is a person attached to the dialysis machine?

For acute or shorter term hemodialysis, a person is hooked up to the dialysis machine by tubing that is attached to a central venous catheter. This tube that is placed in a large vein in the body. (see ATS Patient Information Sheet on *Central Venous Catheter* at www.thoracic.org/patients). The central venous catheter is left in place between times that dialysis is being done. The risks of having a central venous catheter apply

with hemodialysis as well. This catheter may be called a dialysis catheter.

If a person needs chronic (long term) support with dialysis often a different type of access is used that is described later in this fact sheet.

How long does a person stay hooked up to the hemodialysis machine?

How long dialysis is done varies by what it is being used for and how the person is doing on it. A person may be connected to the dialysis machine for 3-4 hours each day or every other day. Sometimes, dialysis must be done over many hours more slowly. Blood tests tell the team how well dialysis is working and how often it is needed.

How long is hemodialysis needed?

Depending on the cause, acute (sudden) kidney failure may be temporary: Most people need hemodialysis for days or weeks, until their own kidney function improves. Some people require dialysis for a few months. In some diseases or with severe kidney injury, failure is permanent. Although doctors can sometimes make a good guess about the chances that a person's kidneys will recover, it can be very hard to tell with acute failure.

What happens if kidney function does not improve?

If the kidneys never recover enough function to be off dialysis, the person will have to decide whether to stay on dialysis or see if a kidney transplant is possible. If chronic (long term) dialysis is needed, a surgery is done to create access to your blood vessels usually in the arm. This artery-vein (AV) access may be in the form of a fistula (surgery is done to connect an artery and vein) or a graft (a tube is placed between an artery and vein). Once a person leaves the hospital, usually he

or she will go to a dialysis center three times a week and have hemodialysis for 3-4 hours each time. Some people are switched from hemodialysis to a different form of dialysis that uses fluid in the abdomen called peritoneal dialysis.

Some people who need chronic dialysis are candidates for a kidney transplant. This is not an option for everyone with kidney failure. A kidney (renal) transplant center would have to evaluate the person to see if he or she meets criteria to be a candidate for transplant.

Is being on hemodialysis uncomfortable?

Hemodialysis is not usually uncomfortable. Symptoms like cramps, headaches, nausea or dizziness can occur but are not common. There are ways to help avoid or manage these symptoms:

- Slow down fluid removal, which could increase dialysis time.
- Adjust blood pressure medications used to prevent low blood pressure or treat high blood pressure.
- Adjust the target weight goal (this is called the dry weight).
- Make adjustments to the dialysis fluid being used.

Often with kidney failure a person is given a special diet and limits on total fluid intake. The need to remove too much fluid during dialysis is one of the things that may make a person feel uncomfortable during treatment.

Are there risks with hemodialysis?

A person with hemodialysis is monitored all the time and dialysis is done by trained healthcare professionals. However, there are risks and people on dialysis often are already very ill and have other health issues. Some of the risks of hemodialysis include:

Low blood pressure (called hypotension)—A person can have low blood pressure during hemodialysis. This is more common in a person who is already very ill. Such drops in blood pressure can be life threatening. Low blood pressure can be a reason not to do hemodialysis or stop it early before it is completed. For some critically ill people, the risk of death from low blood pressure may be greater than the benefits of washing waste products from the blood.

Abnormal Heartbeat—While washing waste products from the blood in dialysis, the heart may develop an abnormal heartbeat or rhythm. Abnormal heart rhythms can be life threatening. Abnormal heartbeats may require emergency treatment to try to bring the heart back to its normal rhythm.

Infection—It is possible to develop an infection in the blood or catheter site while on dialysis. People who are very ill often are at higher risk of infection. Special care is needed to prevent infection of the catheter.

Maintenance of life—Dialysis is a form of life support. Although dialysis is effective at replacing sick kidneys, it is only one factor in whether a person recovers from a serious, sudden illness. Very often, doctors cannot tell if the use of hemodialysis will lead to a successful recovery. If a person is very sick, adding life-support therapies like dialysis may make the dying process longer and more uncomfortable. When a person is not showing any recovery or is continuing to get worse, a decision about whether to stop hemodialysis may come up.

For chronic kidney disease, patients and their healthcare providers may choose to continue dialysis for as long as it is needed and is working. They can also consider its benefits and burden on quality of life. If a person's health and/or quality of life changes, a decision may be made together with the healthcare team to stop dialysis.

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Rx Action Steps

- ✓ Follow advice from your healthcare provider about fluid intake and the diet you should follow if you have kidney problems.
- ✓ Ask about your kidney function test results.
- ✓ If you are on chronic hemodialysis, learn what you need to do to take care of your dialysis catheter and how to avoid infection.

Healthcare Provider's Contact Number:

Additional Resources:

American Thoracic Society

- www.thoracic.org/patients/
- <https://www.thoracic.org/patients/resources/managing-the-icu-experience.pdf>

National Kidney Foundation

<https://www.kidney.org/atoz/content/hemodialysis>

National Institute of Diabetes and Digestive and Kidney Diseases

<https://www.niddk.nih.gov/health-information/kidney-disease/kidney-failure/hemodialysis>

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