

Teaching Plan

To use this lesson for self-study, the learner should read the material, do the activity, and take the test. For group study, the leader may give each learner a copy of the learning guide and follow this teaching plan to conduct the lesson.

Learning objectives

A participant in this lesson will be able to:

- State the function of the kidney
- Define kidney disease
- Identify tests and abnormal test results for kidney function
- Recognize prevention and treatment strategies
- Understand conditions related to kidney disease

Activity

1. What are some strategies you can use to help educate your patients on the risk factors related to kidney disease? As a group, create a list of tips and resources you can use and/or give to patients to help inform them about the condition
2. Play Kidney Disease BINGO by using Figure 20.1. Directions are included in the figure.

The Lesson

Review the material in the lesson with participants. Allow for discussion.

KIDNEY DISEASE

Conclusion

Have participants take the test. Review the answers together. Award certificates to those who answer at least seven (70%) of the test questions correctly.

Kidney Disease

The kidney is a bean-shaped organ that is about the size of a fist. Everyone has two kidneys, which are located in the middle of the back, on the left and right of the spine, just below your rib cage.

The main function of the kidneys is to filter the blood, removing wastes, minerals, and excess water to create urine. These organs also help control blood pressure and produce hormones that the body needs to stay healthy. When the kidneys are damaged, however, wastes can build up within the body, and this deterioration in function is known as kidney disease.

Without significant early symptoms, kidney disease is impossible to diagnose without completing blood and/or urine testing. Unfortunately, many sufferers do not complete these tests until the disease has already caused significant damage to their kidneys, affecting their overall health.

Understanding the risk factors for kidney disease is a vital step in preventing the disease and getting early diagnosis and treatment.

Without intervention, kidney disease can progress into kidney failure, which may ultimately lead to death. In this lesson, you will learn about the risk factors and signs of kidney disease. You will read about the different urine and blood testing used for diagnosis of the condition. You will also explore the different treatment options available for patients who are in the various stages of kidney disease, including dialysis and kidney transplant.

Understanding Kidney Disease

Kidney disease is the result of damaged kidneys that can no longer remove wastes and excess water from the blood as they should. According to the Centers for Disease Control and Prevention, more than 20 million Americans (about 10% of adults in the United States) may have kidney disease.

KIDNEY DISEASE

The main risk factors for developing kidney disease are:

- Diabetes
- High blood pressure
- Cardiovascular disease
- A family history of kidney failure

Every kidney contains around 1 million filtering units comprised of blood vessels, known as glomeruli. Conditions such as diabetes and high blood pressure can damage these blood vessels, but this damage often occurs slowly, over many years. This gradual deterioration is called chronic kidney disease. As glomeruli are damaged, kidneys become less effective at maintaining proper health.

Help Keep Patients Healthy

Help patients at risk for kidney disease keep their kidneys healthy with the following steps:

- Ensure that patients are informed and educated about blood and urine testing for kidney disease
- Monitor and manage conditions such as diabetes, high blood pressure, high cholesterol, and/or heart disease
- Encourage a healthy diet with fresh fruits, vegetables, whole grains, low-fat dairy foods, and limited salt
- Encourage physical activity and weight loss, as appropriate
- Assist and educate patients in taking medications as prescribed by the physician

Following these steps and limiting risk factors can delay or even prevent kidney failure.

Symptoms and diagnosis

Kidney disease is often called a “silent” disease, because most people have no symptoms with early kidney disease. Unfortunately, it is possible for those with kidney disease to “feel fine” until the kidneys have almost completely stopped working.

KIDNEY DISEASE

Blood and urine tests are the only way to check for kidney damage or measure kidney function. If a patient has any of the risk factors outlined above, testing for kidney disease may be recommended.

Tests for kidney disease

The sooner kidney disease is diagnosed, the sooner proper treatment can be implemented to delay or prevent kidney failure. Helping patients understand the tests that are available is vital for prevention and treatment.

Blood testing for kidney disease checks estimated glomerular filtration rate (eGFR)—a measure of how much blood the kidneys filter each minute. This test will indicate how well the kidneys are working. The results are as follows:

- An eGFR of 60 or higher is in the normal range
- An eGFR below 60 may indicate kidney disease, but because GFR decreases as people age, other information may be needed to formally diagnose kidney disease
- An eGFR of 15 or lower may indicate kidney failure

Although eGFR cannot be increased, proper intervention may keep it from dropping further.

The urine test will uncover albumin, a type of protein, in your urine. While a healthy kidney will not let albumin pass into the urine, a damaged kidney may.

Help limit confusion during kidney testing by informing patients of the different names and terms associated with urine testing for kidney disease. Patients may be told that they are being screened for “proteinuria,” “albuminuria” or “microalbuminuria.” Or they could be told that their “urine albumin-to-creatinine ratio” is being measured. This all refers to the same type of testing.

- A urine albumin result below 30 is normal
- A urine albumin result above 30 is abnormal and may indicate kidney disease

Kidney failure

Kidney disease can get worse over time, ultimately leading to kidney failure. Kidney failure is advanced

KIDNEY DISEASE

kidney damage where kidneys perform at less than 15% of the normal function. End-stage renal disease (ESRD) is kidney failure treated by dialysis or kidney transplant. If the kidneys fail, treatment options such as dialysis or a kidney transplant can help replace kidney function.

Early treatment

There are several types of treatments related to kidney disease. During the early stages of kidney disease, medications and lifestyle changes help maintain kidney function and delay kidney failure.

Note that a *low* number for urine albumin is better, while a *higher* number for eGFR is better.

Lifestyle changes recommended during the early stages of kidney disease include:

- Making heart-healthy food choices and exercising regularly to maintain a healthy weight.
- Effectively monitoring and maintaining diabetes or high blood pressure can keep them from causing further damage to your kidneys.
- Consuming less than 1,500 milligrams of sodium each day.
- Eating the right amount of protein. Excess protein makes your kidneys work harder. Eating less protein may help delay progression to kidney failure.
- Quit smoking. Cigarette smoking can make kidney damage worse.

Medications

Certain medications can also help kidneys stay healthier longer. Two types of blood pressure medications have been shown to slow down kidney disease and delay kidney failure. These medications are:

- Angiotensin-converting enzyme (ACE) inhibitors
- Angiotensin receptor blockers (ARBs)

The most important step a patient can take to treat kidney disease is to control his or her blood pressure. Many people need two or more types of medications to keep their blood pressure below recommended levels to keep the kidneys healthy.

KIDNEY DISEASE

It is common for older adults to be taking medications for other conditions. As kidney disease progresses, it is vital for physicians to monitor and adjust the dosages of all medications that affect the kidney or are removed by the kidney, as needed.

Treatment for later stages

If kidney disease progresses to kidney failure, the goal of treatment changes. There are two main options for kidney disease in this stage: dialysis and transplantation. Patients suffering from kidney failure should be educated on their treatment options.

Dialysis

Dialysis is a treatment that takes waste products and extra fluid out of the body. There are two main forms of dialysis—hemodialysis and peritoneal dialysis.

- In **hemodialysis**, the blood passes through a filter located outside of the body, where the blood is cleaned and returned to the body.
- **Peritoneal dialysis** uses the lining of a patient's abdominal cavity (the space that holds organs such as the stomach, intestines, and liver) to filter the blood. It works by putting a special fluid into the abdomen that absorbs waste products in your blood as it passes through small blood vessels in this lining. This fluid is then drained away. Peritoneal dialysis can often be done at home as a patient sleeps.

Neither form of dialysis can cure kidney failure; they are treatments to replace the function of the kidneys and may help a patient feel better and live longer.

Kidney transplant

Instead of dialysis, some people with kidney failure may be able to receive a kidney transplant. This treatment requires having a healthy kidney from another person surgically placed into the body. The donated kidney replaces the failed kidneys.

KIDNEY DISEASE

A donated kidney can come from:

- An anonymous donor who has recently died
- A living person—usually a relative
- An unrelated donor, including a spouse or friend

Unfortunately, due to the shortage of donated kidneys, patients on the waiting list for a donor kidney may have to wait many years.

It is important for patients to understand that a kidney transplantation is not a cure. Patients will need to be seen by a physician regularly and will need to take medications for as long as they have the transplant to suppress the immune system to limit the risk of rejection of the transplanted kidney.

Age and kidney function

Kidneys may be significantly impacted by aging. As the kidneys age, there may be a decrease in the number of filtering units in each kidney, kidney tissue may decrease, and the blood vessels that supply the kidney may harden—all of which cause the kidneys to filter blood more slowly.

With a decrease in filtering function, a person may be more likely to have complications from certain medications and/or an unsafe buildup of medicines that are removed from the blood by the kidneys in a healthy person.

Kidneys may also become more sensitive to certain medications. For example, nonsteroidal anti-inflammatory drugs (NSAID) and some antibiotics can cause acute kidney injury in some situations.

Additional conditions

Kidney disease can lead to other health problems. While working with patients who suffer from kidney disease, home health staff should be aware of the following related conditions.

KIDNEY DISEASE

- Depression
- Heart disease
- Bone disease
- Arthritis
- Nerve damage
- Malnutrition

To help keep patients safe and healthy, report any noticeable changes in a patient's condition to a supervisor.

Kidney disease is a difficult condition to diagnose early on. Discuss the risk factors and prevention tips discussed in this lesson with your patients and help kidney disease sufferers get the treatment they need before additional complications arise.

Figure
20.1A**Kidney Disease Bingo Directions and Clues**

Direction for teacher/leader of activity:

Gather some markers. These could be pennies, poker chips, candy, stickers, etc. (Or have players mark their BINGO words with a pen or pencil).

Make copies of the following BINGO words, and cut each word square (or have players cut the squares). Give a set of these 25 words to each BINGO player, and have them create their own board using the blank BINGO sheet by placing the cut out words in random order on each square of the sheet. However they decide to create their BINGO sheet should not change once the game has begun.

To play the game, read out the clues. Whoever gets five in a row first wins, but keep playing until all clues are read and all players' BINGO sheets are totally covered.

BINGO Clues

- Bean-shaped organ about the size of a fist that filters blood. (kidney)
- This is a normal eGFR result. (≥ 60)
- This is one strategy to help prevent or slow kidney disease. (healthy diet)
- Kidney disease can be detected only by these. (tests)
- As part of the aging process, blood vessels that supply the kidneys may _____, which may cause the kidneys to filter blood more slowly. (harden)
- This is one of four main risk factors for developing kidney disease. (high blood pressure)
- These are filtering blood vessels in the kidneys. (glomeruli)
- This is treated by dialysis or kidney transplant. (kidney failure)
- This is a test that checks how much blood the kidneys filter each minute. (eGFR)
- This is a kidney tests that measures a protein in the urine. (urine albumin)
- This is the percentage of adults in the U.S. that likely have kidney disease. (10%)
- This is the medical term used to classify kidney disease that has progressed significantly. (ESRD)
- This uses the lining of a patient's abdominal cavity (the space that holds organs such as the stomach, intestines, and liver) to filter the blood. (peritoneal dialysis)

Figure
20.1A

Kidney Disease Bingo Directions and Clues (cont.)

- This is the maximum amount of sodium, in milligrams, someone with any hint of kidney disease should consume daily. (1,500)
- This is one type of blood pressure medication that has been shown to slow down kidney disease and delay kidney failure. (ARBs)
- Kidney failure is when kidneys perform at less than what percentage of normal function? (15%)
- This is a urine albumin test result that may indicate kidney disease. (>30)
- This is another treatment option for end-stage renal failure other than dialysis. (transplant)
- Those who receive kidney transplants will have to take medications all their life to suppress what? (immune system)
- These are over-the-counter medications that can cause acute kidney injury in some situations when someone is aging and may have less than optimal kidney function. (NSAIDs)
- This is a treatment in which blood passes through a filter located outside of the body, where the blood is cleaned and returned to the body. (hemodialysis)
- This is a disease that often coincides with kidney disease. (depression)
- Kidney disease is known as the _____ disease because patients rarely suffer symptoms. (silent)
- This is an example of one source for a kidney for a kidney transplant. (living person)

KIDNEY DISEASE

Figure 20.1B

Kidney Disease Bingo

kidney	urine albumin	10%	hemodialysis	transplant
ARBs	ESRD	tests	eGFR	harden
glomeruli	15%	FREE SPACE	depression	>30
immune system	kidney failure	high blood pressure	NSAIDs	living person
1,500	peritoneal dialysis	healthy diet	≥60	silent

KIDNEY DISEASE

Figure
20.1B

Kidney Disease Bingo

		FREE SPACE		