



American Heart Association.

Rise Above Heart Failure®

# How Can I Improve My Low Ejection Fraction?



## Talk with your healthcare provider.



My ejection fraction (or EF) \_\_\_\_\_



Date: \_\_\_\_\_

### Under 40%

may have evidence of heart failure (HF), heart valve disease or cardiomyopathy.

### 41% to 49%

may be considered "borderline" but does not always indicate that a person is developing heart failure.

### Between 50% - 70%

Between 50% to 70% is considered a normal ejection fraction. However, there is a type of HF with an ejection fraction over 50.



## Questions to ask your healthcare provider:

Does my low EF have a specific cause I should know about?

What action steps are most likely to help me improve my low EF?

Can medication improve my EF?

Are there treatments for my related condition(s)?

Should I use a symptom tracker?

If yes, download My HF Path app or see resources at [heart.org/RiseAboveHF](http://heart.org/RiseAboveHF)



## Treat any known causes of heart failure.



Am I getting treated for any of these HF-related conditions?



Check all that apply.



High Blood Pressure



Diabetes



Metabolic Syndrome



Heart Valve Disease

Other: \_\_\_\_\_



## Get the right amount of physical activity.



Exercise options to discuss with your healthcare provider:

What exercises are safe for me to do?

What intensity should my workout be? (Low - Med)

How often and for how long should I exercise each week?

Are there exercises I should avoid?



## Pay attention to your weight.

My current weight \_\_\_\_\_

My target weight \_\_\_\_\_

I should recheck my weight \_\_\_\_\_ time(s), each \_\_\_\_\_ day/week/month

Date	Weight	Date	Weight	Date	Weight	Date	Weight	Date	Weight



## Know your sodium limits and regulate fluids.

My daily recommended sodium limit is \_\_\_\_\_ mg/day.  
(1/4 teaspoon salt = 575 mg sodium)

Recommendations for sodium management:

Discuss and check all that may help you.

Read product labels

Use a salt substitute

Track intake each day

Discover new recipes



## Eliminate harmful substances.

Talk with your provider if you need resources to help you:

Check all that apply.

Eliminate or Reduce Alcohol

Quit Smoking

Stop Using Cocaine or Amphetamines



## Lower your stress.

Ask your healthcare provider:

Stress management strategies I am likely to try:

Do you have any recommendations for stress-management with HF?

<input type="checkbox"/> Increasing daily activity	<input type="checkbox"/> Connecting	<input type="checkbox"/> Meditating
<b>Plans and ideas</b>		

Find more resources at [heart.org/RiseAboveHF](http://heart.org/RiseAboveHF)

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Supported by



## Heart failure medications

Medication	How it works	Possible side effects
<b>Diuretics (Water Pills)</b> Lasix (furosemide) Demadex (torsemide) Bumex (bumetanide) Zaroxolyn (metolazone) Microzide (HCTZ, hydrochlorothiazide)	Help the kidney to get rid of extra water. Help to relieve swelling and shortness of breath.	<ul style="list-style-type: none"> <li>• Increased urination (this means the pills are working)</li> <li>• Muscle cramps</li> <li>• Dizziness</li> <li>• Low potassium and magnesium levels</li> </ul>
<b>ACE-Inhibitors</b> Prinivil/Zestril (lisinopril) Vasotec (enalapril) Capoten (captopril)	Lowers blood pressure by relaxing blood vessels, so heart does not have to work as hard.	<ul style="list-style-type: none"> <li>• Swelling of tongue or lips—this is rare (<b>Go to the nearest Emergency Room right away</b>)</li> <li>• Dry cough</li> <li>• Dizziness</li> <li>• Low blood pressure</li> <li>• Altered sense of taste</li> </ul>
<b>Angiotensin II Receptor Blockers (ARB)</b> Cozaar (losartan) Diovan (valsartan)	Lowers blood pressure by relaxing blood vessels, so heart does not have to work as hard.	<ul style="list-style-type: none"> <li>• Swelling of tongue or lips—this is rare (<b>Go to the nearest Emergency Room right away</b>)</li> <li>• Dizziness</li> <li>• Low blood pressure</li> </ul>
<b>Beta-Blockers</b> Coreg (carvedilol) Toprol XL (metoprolol succinate) Zebeta (bisoprolol) Lopressor (metoprolol tartrate) Tenormin (atenolol)	Slows down heart rate and lowers blood pressure so heart does not have to work as hard.	<ul style="list-style-type: none"> <li>• Feeling tired (usually goes away after a few weeks)</li> <li>• Dizziness</li> <li>• Low blood pressure</li> <li>• Slows heart rate</li> </ul>
<b>Aldosterone Blockers</b> Aldactone (spironolactone) Inspra (eplerenone)	Helps body get rid of salt and water. Raises blood potassium levels.	<ul style="list-style-type: none"> <li>• High potassium levels</li> <li>• Breast tenderness and growth in men and women (Contact your doctor if bothersome)</li> </ul>
<b>Lanoxin (digoxin)</b>	Helps the heart to pump better and decreases the symptoms of heart failure.	<ul style="list-style-type: none"> <li>• Nausea/vomiting</li> <li>• Loss of appetite</li> <li>• Vision changes</li> </ul>
<b>Vasodilators</b> Apresoline (hydralazine) Imdur/Ismo (isosorbide mononitrate) Isordil (isosorbide dinitrate)	Relaxes blood vessels and lowers blood pressure. Makes it easier for heart to pump.	<ul style="list-style-type: none"> <li>• Dizziness</li> <li>• Headache (temporary)</li> <li>• Stomach upset</li> <li>• Flushing</li> <li>• Low blood pressure</li> </ul>
<b>Potassium Supplements</b> K-Dur, Klor-Con, Micro K	Replace low levels of potassium in blood	<ul style="list-style-type: none"> <li>• High potassium levels</li> <li>• Nausea</li> </ul>

- Know which pill is your water pill, or diuretic. Sometimes your physician will change how much of this medicine you take.

Ask questions. If you have any questions about your medicines, ask your physician, pharmacist or nurse.

### **Medicine Goals**

Share this checklist with your physician or nurse so they can help you accomplish your goals:

- I will use a system to help me remember to take my medicines.
  - I will take my medicines every day.
  - I will make a list of all my medicines.
  - I will learn what my medicines are for.
  - I will bring all of my medicines with me to my physician's appointment.
  - I will (write your own goal below):
- 
- 
- 

### **Diet**

Heart failure patients need to follow a low-salt diet. A diet high in salt:

- Makes the body retain extra fluid.
- Causes the heart to work harder.
- Makes heart failure symptoms worse.

A low-salt diet can relieve this added stress to the heart. Following a low-salt diet will make you feel better.

#### **What is a Low-Salt Diet?**

Salt, or sodium, is found in many foods. A low-salt diet usually contains less than 2,000 mg of sodium per day. Ask your doctor how much sodium you can have each day. Your health care team can teach you how to follow a low-salt diet. This is a very important step in your treatment plan. If you have questions, ask your doctor or nurse.

General guidelines for a low-salt diet are listed below.

- Do not use a salt shaker. One teaspoon of salt has 2,400 mg of sodium.
- Do not add salt when you cook. Add fresh herbs, pepper, garlic or onion.
- Avoid the following foods as they are high in sodium:
  - Most lunch meats.
  - Cheese.
  - Ham.
  - Hot dogs.
  - Canned soups.
  - Pickles.

- Fast food.
- Snacks such as pretzels and potato chips.
- Choose foods low in salt for each meal.

Meal choices may include:

- Breakfast: Fruit, oatmeal, egg whites, shredded wheat, hot cereal (not instant).
- Lunch: Fresh fish, chicken, turkey, or meat (baked or broiled), salad, fresh fruit.
- Dinner: Fresh fish, chicken, turkey, or meat (baked or broiled), steamed rice, fresh or frozen vegetables.
- Snacks: Yogurt, unsalted popcorn, fresh fruit.

### ***Tips for Eating Out***

- Ask that salt not be added when your food is cooked.
- Avoid butter and cheese.
- Avoid fried foods.
- Choose oil and vinegar salad dressing; avoid creamy dressings like ranch and blue cheese.
- Limit fast food.
- Avoid bacon, sausage and ham.
- If nutrition information is available, look at the sodium content before making a selection.

### ***Cooking at Home***

- Do not add salt when you cook or eat.
- Use seasonings such as garlic, onion, pepper, or basil.
- Make your favorite foods with less sodium. Freeze extras for later.

### ***Foods to Avoid***

- Microwave meals.
- Frozen processed meals.
- Canned foods, including soups and vegetables.

### ***Read Food Labels***

Food packages have nutrition labels. The labels list how much sodium is in one serving. But, the package may have more than one serving. The sodium in one serving might not be too much. But, if you eat the whole package, you might be eating too much sodium.

Choose items labeled:

- No salt added.
- Low sodium.
- Sodium free.

The label in Figure 2 says there are 2 servings per container. The sodium content for one serving is 970 mg, but for the whole package, it is 1940 mg. You should not eat this food since it is too salty. Choose foods that have less than 140 mg of sodium per serving.

Be careful when foods are labeled “Lower Sodium.” You still must read the food label.

**Figure 2**

Sodium content per serving

Serving size

Nutrition Facts	
Serving Size 5 oz.	
Serving Per Container 2	
Amount Per Serving	
<b>Calories</b> 120	Calories From Fat 0
% Daily Value*	
<b>Total Fat</b> 0g	0%
Saturated Fat 0g	0%
<b>Cholesterol</b> 5mg	2g
<b>Sodium</b> 970mg	40%
<b>Total Carbohydrates</b> 26g	9%
Dietary Fiber 2g	9%
Sugar 16g	
<b>Protein</b> 3g	
Vitamin A 8%	Vitamin C 60%
Calcium 2%	Iron 2%

\*Percent daily values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

### Diet Goals

Decrease your sodium consumption in stages. Set realistic goals for yourself. Use this checklist to help you decrease your salt intake. Share this checklist with your physician or nurse so they can help you reach your goals:

- I will remove the salt shaker.
- I will use salt-free seasonings.
- I will ask for my food to be prepared without salt when I eat out.
- I will remove one food high in salt from my diet each week.
- I will avoid eating at fast-food restaurants.
- I will avoid canned foods and soups.
- I will eat more fresh fruits and vegetables.
- I will (write your own goal below):

### Exercise

Regular activity is important to your health. Being active can help you feel better, both physically and mentally. Being active also might improve your heart’s function and your energy level.

#### Get Started

- Talk to your physician before you start an exercise program.
- Select an activity that you like to do. Warm up first.
- Start slowly. Begin with five to 10 minutes of exercise, 3 to 5 times each week. The goal for most heart failure patients is to have 30 minutes of activity daily.

# HEART FAILURE ZONES

My goal weight is: \_\_\_\_\_

I will monitor my symptoms daily and take action if ONE or MORE are in the yellow or red zone.

	GO ZONE	CAUTION ZONE	STOP ZONE
<b>WEIGHT</b> 	I am at my goal weight	I have gained or lost 3 or more lbs in a day or 5 or more lbs in a week	I have gained or lost more than 5 lbs in a day or 7 lbs in a week
<b>SWELLING</b> 	I have NO increase in swelling	I have some increased swelling	I have a lot of swelling
<b>BREATHING</b> 	I have NO trouble breathing or my breathing is normal for me	I feel more short of breath doing my normal activities  I need to use more pillows when I sleep	I feel short of breath at rest and cannot catch my breath  I need to sit in a chair to sleep
<b>ENERGY</b> 	I have my normal amount of energy	I feel more tired or weak	I feel very tired and can barely do my normal activities
<b>NEXT STEPS</b> 	All are green: My symptoms are in control! I will continue with my normal daily routine	One or more are yellow: I need to take action <b>TODAY!</b> I will call my doctor _____ at (_____) _____	One or more are red: <b>I NEED TO TAKE IMMEDIATE ACTION AND CALL MY DOCTOR'S OFFICE OR 911!</b>

# Chronic Kidney Disease in the United States, 2021

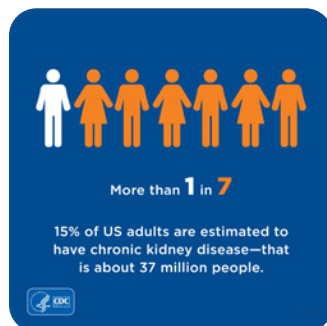
Accessible Version: <https://www.cdc.gov/kidneydisease/publications-resources/CKD-national-facts.html>

When people develop **chronic kidney disease (CKD)**, their kidneys become damaged and over time may not clean the blood as well as healthy kidneys. If kidneys do not work well, toxic waste and extra fluid accumulate in the body and may lead to high blood pressure, heart disease, stroke, and early death. However, people with CKD and people at risk for CKD can take steps to protect their kidneys with the help of their health care providers.

## CKD Is Common Among US Adults

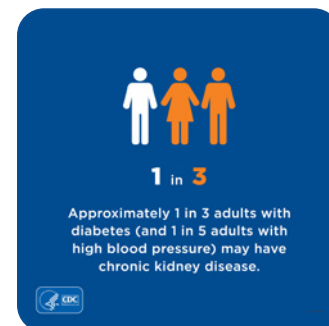
### Fast Stats

- More than 1 in 7, that is 15% of US adults or 37 million people, are estimated to have CKD.<sup>†</sup>
- As many as 9 in 10 adults with CKD **do not know** they have CKD.
- About 2 in 5 adults with severe CKD **do not know** they have CKD.



## CKD Risk Factors

Diabetes and high blood pressure are the more common causes of CKD in adults. Other risk factors include heart disease, obesity, a family history of CKD, inherited kidney disorders, past damage to the kidneys, and older age.



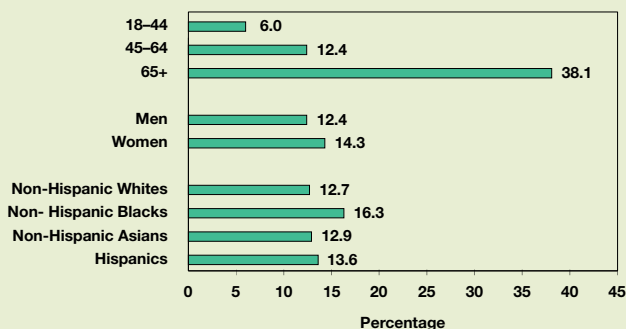
**Managing blood sugar and blood pressure can help keep kidneys healthy.**

## CKD by Age, Sex, and Race/Ethnicity

### According to current estimates:<sup>†</sup>

- CKD is more common in people aged 65 years or older (38%) than in people aged 45–64 years (12%) or 18–44 years (6%).
- CKD is slightly more common in women (14%) than men (12%).
- CKD is more common in non-Hispanic Black adults (16%) than in non-Hispanic White adults (13%) or non-Hispanic Asian adults (13%).
- About 14% of Hispanic adults have CKD.

### Percentage of US Adults Aged 18 Years or Older With CKD,<sup>†</sup> By Age, Sex, and Race/Ethnicity



<sup>†</sup>CKD stages 1–4 using data from the 2015–2018 National Health and Nutrition Examination Survey and the CKD Epidemiology Collaboration (CKD-EPI) equation. CKD stage 5 (that is, kidney failure) was not included. These estimates were based on a single measure of albuminuria or serum creatinine; they do not account for persistence of albuminuria or levels of creatinine that are higher than normal as indicated by the Kidney Disease Improving Global Outcomes recommendations. Thus, CKD in this report might be overestimated. Estimates by sex and race/ethnicity were age-standardized using the 2000 US census population; the overall percentage is unadjusted. The number of adults with CKD stages 1–4 was estimated by applying the overall percentage to the 2019 US Census population aged 18 years or older. Blood pressure-lowering medications included angiotensin-converting enzyme inhibitors or angiotensin II receptor blockers; diagnosed diabetes was self-reported.

<sup>†</sup>**How the estimates were calculated:** Percentage of CKD stages 1–4 among US adults aged 18 years or older using data from the 2015–2018 National Health and Nutrition Examination Survey and the CKD Epidemiology Collaboration (CKD-EPI) equation. CKD stage 5 (that is, kidney failure) was not included. These estimates were based on a single measure of albuminuria or serum creatinine; they do not account for persistence of albuminuria or levels of creatinine that are higher than normal as indicated by the Kidney Disease Improving Global Outcomes recommendations. Thus, CKD in this report might be overestimated. Estimates by sex and race/ethnicity were age-standardized using the 2000 US census population; the overall percentage is unadjusted. The number of adults with CKD stages 1–4 was estimated by applying the overall percentage to the 2019 US Census population aged 18 years or older. Blood pressure-lowering medications included angiotensin-converting enzyme inhibitors or angiotensin II receptor blockers; diagnosed diabetes was self-reported.



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## Ways to Prevent CKD

- **Manage** risk factors for CKD:
  - High blood pressure.
  - High blood sugar levels.

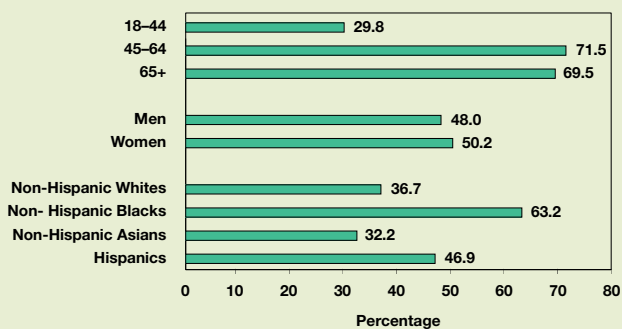
Keeping a healthy body weight through a balanced diet and physical activity may help manage blood pressure and blood sugar levels in people with diabetes or in people at risk of developing type 2 diabetes.

**Preventing type 2 diabetes can help prevent CKD and kidney failure.**

## Treatment to Lower Blood Pressure

- Blood pressure–lowering medications are recommended for people with diabetes and CKD. However, the percentage of adults with CKD and diagnosed diabetes who are prescribed blood pressure–lowering medications is less than ideal.
  - Prescription of blood pressure–lowering medications is higher in people with CKD and diagnosed diabetes aged 45 years or older (about 70%) than in those aged 18–44 years (30%).
  - Prescription of blood pressure–lowering medications is similar in adult women and men with CKD and diagnosed diabetes (about 50%).
  - Prescription of blood pressure–lowering medications is higher in non-Hispanic Black adults with CKD and diagnosed diabetes (63%) than in non-Hispanic White adults (37%) or non-Hispanic Asian adults (32%).
  - About 47% of Hispanic adults with CKD and diagnosed diabetes are prescribed blood pressure–lowering medications.

**Percentage of US Adults Aged 18 Years or Older With CKD and Diagnosed Diabetes Who Were Prescribed Blood Pressure–Lowering Medications,<sup>†</sup> by Age, Sex, and Race/Ethnicity**



<sup>†</sup>Angiotensin-converting enzyme inhibitors or angiotensin II receptor blockers using data from the 2015–2018 National Health and Nutrition Examination Survey. For more details on the methods, see 'How the Estimates Were Calculated.'

## Testing and Treatment: Find it Early, Treat it Early

- **Test** for CKD regularly in people who have diabetes, high blood pressure, or other risk factors for CKD. People with CKD may not feel ill or notice any symptoms until CKD is advanced.
- The only way to find out if people have CKD is through simple blood and urine tests. The blood test checks for the level of creatinine, a waste product produced by muscles, to see how well the kidneys work. The urine test checks for protein, which may indicate kidney damage.
- Following a healthy diet and taking medicine for diabetes, medicine for high blood pressure, and other medications to protect the kidneys may keep CKD from getting worse and may prevent other health problems such as heart disease.

## CKD-Related Health Problems

As CKD worsens over time, related health problems become more likely. However, CKD-related health problems can improve with treatment.

### Heart Disease and Stroke

- Having CKD increases the chances of having heart disease and stroke.
- Managing high blood pressure, blood sugar, and cholesterol levels—all factors that increase the risk for heart disease and stroke—is very important for people with CKD.

### Early Death

Adults with CKD are at a higher risk of dying earlier than adults of similar age without CKD.

### Health Problems Due to Low Kidney Function

- Anemia or low red blood cell count, which can cause fatigue and weakness.
- Extra fluid in the body, which can cause high blood pressure, swelling in the legs, or shortness of breath.
- A weakened immune system, which make it easier to develop infections.
- Loss of appetite or nausea.
- Decreased sexual response.
- Confusion, problems with memory and thinking, or depression.
- Low calcium levels and high phosphorus levels in the blood, which can cause bone disease and heart disease.
- High potassium levels in the blood, which can cause an irregular or abnormal heartbeat and lead to death.

## Kidney Failure

Kidney failure happens when kidney damage is severe and kidney function is very low. Dialysis or a kidney transplant is then needed for survival. Kidney failure treated with dialysis or a kidney transplant is called **end-stage renal disease (ESRD)**. CKD is more likely to lead to kidney failure, especially in older adults, if the kidneys are damaged by the inability to manage risk factors, repeated kidney infections, or drugs or toxins that are harmful to the kidneys. Social factors such as lower income and related factors of food insecurity and poorer access to quality health care are also associated with worsening CKD. However, not everyone with CKD develops kidney failure. If CKD is detected early, treatment may slow the decline in kidney function and delay kidney failure. In some cases, kidney failure develops even with treatment.

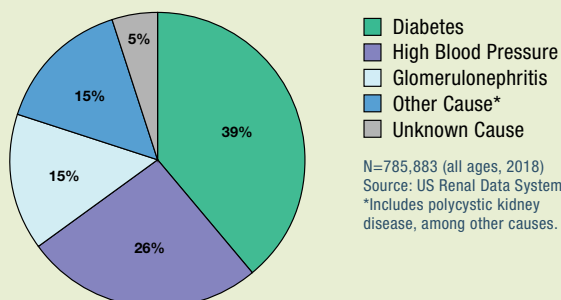
**Renal is a medical term meaning “having to do with the kidneys.”**

**Talk to a kidney doctor about treatment options if CKD is severe and kidney function is very low.**

## Facts About ESRD

- In 2018, about 131,600 people in the United States started treatment for ESRD.
- Nearly 786,000 people in the United States, or 2 in every 1,000 people, are currently living with ESRD: 71% are on dialysis and 29% are living with a kidney transplant.
- For every 2 women who develop ESRD, 3 men develop ESRD.
- For every non-Hispanic White person who develops ESRD, 3 non-Hispanic Black people develop ESRD.
- For every 3 non-Hispanic people who develop ESRD, 4 Hispanic people develop ESRD.
- Among adults aged 18 years or older in the United States, diabetes and high blood pressure are the main causes of ESRD.
- Among children and adolescents younger than 18 years in the United States, polycystic kidney disease and glomerulonephritis (inflammation of the kidneys) are the main causes of ESRD.

**Reported Causes of End-Stage Renal Disease in the United States**



## People with CKD Can Lower Their Risk for Kidney Failure

- **Learn** about CKD from a primary care doctor or a kidney doctor (nephrologist) to better understand treatment options and protect the kidneys. People with glomerulonephritis, polycystic kidney disease, or other kidney disease should talk about specific treatment options with a kidney doctor.
- **Monitor and manage** blood sugar and blood pressure.
  - Have blood sugar and blood pressure checked regularly.
  - Use medicines if prescribed to lower blood sugar and blood pressure.
- **Manage CKD:**
  - Make lifestyle changes (e.g., healthy eating, physical activity) to prevent more kidney damage. Meet with a dietitian to create a kidney-healthy eating plan that is low in salt and fat and has the right amount and source of protein. As CKD gets worse, the plan may also include limiting phosphorus and potassium.
  - Use medicines as directed to slow the decline in kidney function.
  - Stop smoking or do not start smoking.
  - Avoid exposures that can harm the kidneys or cause kidney function to suddenly get worse:
    - ◆ Certain medicines:
      - Over-the-counter pain medicines like ibuprofen and naproxen, which are also called non-steroidal anti-inflammatory drugs.
      - Some antibiotics.
    - ◆ Certain herbal supplements.
    - ◆ Excessive alcohol intake.
  - Review with health care providers all prescription and over-the-counter medications to make sure they are safe for the kidneys. Always talk to a doctor before taking any supplements.
  - Check with a doctor about other behaviors or substances that can harm the kidneys or about special precautions to take when doing medical tests or procedures, such as imaging studies or colonoscopies.

**People with diabetes, high blood pressure, or CKD need to talk to their doctor about how to protect their kidneys.**

## Acknowledgments

The following organizations\*\* collaborated in developing and reviewing this fact sheet. Check their websites for CKD online resources for patients or providers:

### Centers for Disease Control and Prevention

[www.cdc.gov/kidneydisease](http://www.cdc.gov/kidneydisease)

### Centers for Medicare & Medicaid Services

[www.cms.gov](http://www.cms.gov)

### US Department of Defense

[www.health.mil](http://www.health.mil)

### US Department of Veterans Affairs

[www.va.gov/health](http://www.va.gov/health)

### US Food & Drug Administration

[www.fda.gov](http://www.fda.gov)

### Kidney Interagency Coordinating Committee

[www.niddk.nih.gov/about-niddk/advisory-coordinating-committees/kuh-icc/kicc](http://www.niddk.nih.gov/about-niddk/advisory-coordinating-committees/kuh-icc/kicc)

### National Heart, Lung, and Blood Institute of the National Institutes of Health

[www.nhlbi.nih.gov](http://www.nhlbi.nih.gov)

### National Institute of Diabetes and Digestive and Kidney Diseases of the National Institutes of Health

[www.niddk.nih.gov](http://www.niddk.nih.gov)

### United States Renal Data System

[www.usrds.org](http://www.usrds.org)

### American Association of Kidney Patients

[www.aakp.org](http://www.aakp.org)

### American Society of Nephrology

[www.asn-online.org](http://www.asn-online.org)

### National Kidney Foundation

[www.kidney.org](http://www.kidney.org)

### University of California, San Francisco, and University of California, San Francisco Center for Vulnerable Populations

[www.ucsf.edu](http://www.ucsf.edu)

### University of Michigan, Division of Nephrology, Department of Internal Medicine, and University of Michigan Kidney Epidemiology and Cost Center

[www.med.umich.edu/intmed/nephrology](http://www.med.umich.edu/intmed/nephrology)

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## For Public Inquiries and Publications

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24 hours a day, 7 days a week

**TAKE CARE** OF YOUR  
**KIDNEYS** AND THEY WILL  
**TAKE CARE** OF **YOU**.

## CHRONIC KIDNEY DISEASE

Your Kidneys May Not Work Well If You Have Diabetes.

Diabetes can cause kidney disease, also known as chronic kidney disease (CKD). The good news is that there is a lot you can do to prevent kidney problems, including keeping your blood sugar and blood pressure under control.

Having kidney disease increases the chances of having heart disease, heart attacks, and strokes.

Keeping your kidneys healthy will help take care of your heart.



Centers for Disease  
Control and Prevention  
National Center for Chronic  
Disease Prevention and  
Health Promotion

## What Happens If You Have Kidney Damage?

Changes or damage to your kidneys may cause your kidneys to fail. If your kidneys fail, your blood must be filtered (dialysis treatments) several times a week.

You may also need to have a kidney transplant.



## How Will You Know If You Have Kidney Problems?

Ask your doctor to test your blood and your pee.

If the doctor finds protein (albumin) in your pee, it is a sign of the start of kidney disease caused by diabetes.

Get tested yearly.

Get tested more often if:

- » Your test shows protein in your pee or;
- » Your kidneys are not working as they usually do.



## If You Have Diabetes, Take These Steps:

Meet blood sugar targets as often as you can.

Get tested for your average level of blood sugar over the past three months (A1C test).

Get your A1C test at least twice a year, but ideally up to four times a year.

If your blood pressure is high, check it regularly and get it under control to make sure your kidneys stay healthy.

Talk to your doctor about medicines that harm your kidneys and other ways to lower your blood pressure.



## What is the Best Way to Keep Your Kidneys Healthy?

Keep your blood pressure below 140/90, or ask your doctor what the best blood pressure target is for you.

Stay in your target cholesterol range.

Eat foods lower in salt.

Eat more fruits and vegetables.

Stay active.

Take your medications as directed.



## Who is More Likely to Develop Kidney Disease?

Approximately 1 of 3 adults with diabetes and 1 of 5 adults with high blood pressure may have CKD.

In addition to diabetes and high blood pressure, other problems that put you at greater chance of kidney disease include: heart disease, obesity (being overweight), and a family history of CKD. Kidney infections and a physical injury can also cause kidney disease.



## What Can You Do to Prevent Kidney Failure?

Get tested for CKD regularly if you are at risk.

Find it early. Treat it early.

Ask your doctor to test your blood or pee. If you have diabetes, get tested yearly.

If you have diabetes, stay in your target blood sugar range as much as possible.

Lose weight if you are overweight.

Get active. Physical activity helps control blood sugar levels.

Quit smoking.

Getting a checkup? Make sure to get your kidneys checked too.

Take medications as directed.

If you have CKD, meet with a dietitian to make a kidney-healthy eating plan.



Learn more: [www.cdc.gov/ckd](http://www.cdc.gov/ckd)



A QUICK GUIDE ON

# Chronic Obstructive Pulmonary Disease



**U.S. Department of Health and Human Services**  
National Institutes of Health  
National Heart, Lung, and Blood Institute

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**COPD, or chronic obstructive pulmonary disease, is a serious lung disease that over time makes it hard to breathe.** Other names for COPD include chronic bronchitis or emphysema.

COPD, a leading cause of death, affects millions of Americans and causes long-term disability.

Most often, COPD occurs in people age 40 and over who...

- Have a history of smoking
- Have had long-term exposure to lung irritants such as air pollution, chemical fumes, or dust from the environment or workplace
- Have a rare genetic condition called alpha-1 antitrypsin (AAT) deficiency
- Have a combination of any of the above

### MAJOR COPD RISK FACTORS



**WHAT IS COPD?**

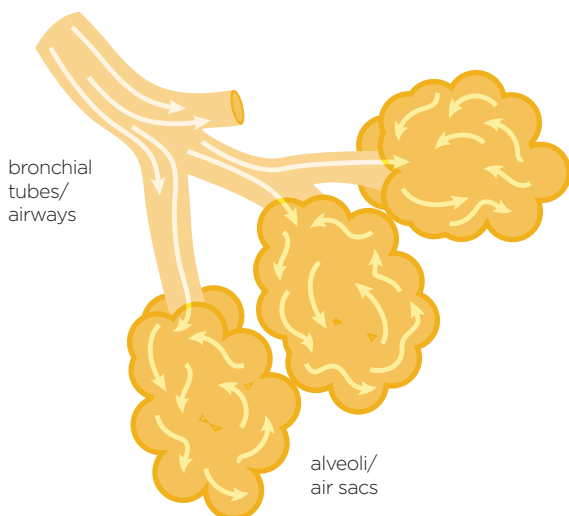


## To understand what COPD is, we first need to understand how respiration and the lungs work:

When air is breathed in, it goes down the windpipe into tubes in the lungs called bronchial tubes or airways. Within the lungs, bronchial tubes branch into thousands of smaller, thinner tubes called bronchioles. These tubes end in bunches of tiny round air sacs called alveoli.

Small blood vessels called capillaries run through the walls of the air sacs. When air reaches the air sacs, oxygen passes through the air sac walls into the blood in the capillaries. At the same time, carbon dioxide (the respiration waste gas) moves from the capillaries into the air sacs. This process is called **gas exchange**.

### GAS EXCHANGE IN A LUNG

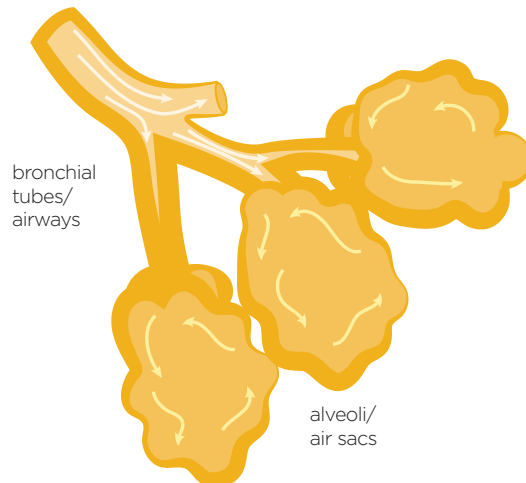


The airways and air sacs are elastic (stretchy). When breathing in, each air sac fills up with air like a small balloon. When breathing out, the air sacs deflate and the air goes out.

### In COPD, less air flows in and out of the airways because of one or more of the following:

- The airways and air sacs lose their elastic quality.
- The walls between many of the air sacs are destroyed.
- The walls of the airways become thick and inflamed.
- The airways make more mucus than usual, which can clog them.

### COPD DECREASES AIR FLOW AND GAS EXCHANGE IN THE LUNGS



## HOW DOES COPD AFFECT BREATHING?





**In emphysema**, the walls between many of the air sacs are damaged. As a result, the air sacs lose their shape and become floppy. This damage also can destroy the walls of the air sacs, leading to fewer and larger air sacs instead of many tiny ones. If this happens, the amount of gas exchange in the lungs is reduced.

**In chronic bronchitis**, the lining of the airways is constantly irritated and inflamed. This causes the lining to thicken. Lots of thick mucus forms in the airways, making it hard to breathe.

**Most people who have COPD have a variable combination of both emphysema and chronic bronchitis.** Thus, the general term “COPD” is more accurate.

Some people who have asthma can also develop COPD. Asthma is a chronic (long-term) lung disease that inflames and tightens the airways. Asthma treatments usually can reverse the inflammation and narrowing. However, in the presence of COPD, much of the reversibility is lost.



**At first, COPD may cause no symptoms or only mild symptoms.**

As the disease gets worse, symptoms usually become more severe. When symptoms are mild, they may not be noticed right away and people may adjust their lifestyle to make breathing easier. For example, taking the elevator instead of the stairs.

**COMMON SIGNS AND SYMPTOMS OF COPD INCLUDE:**



CONSTANT COUGH



SHORTNESS OF BREATH doing everyday activities



CAN'T BREATHE DEEP

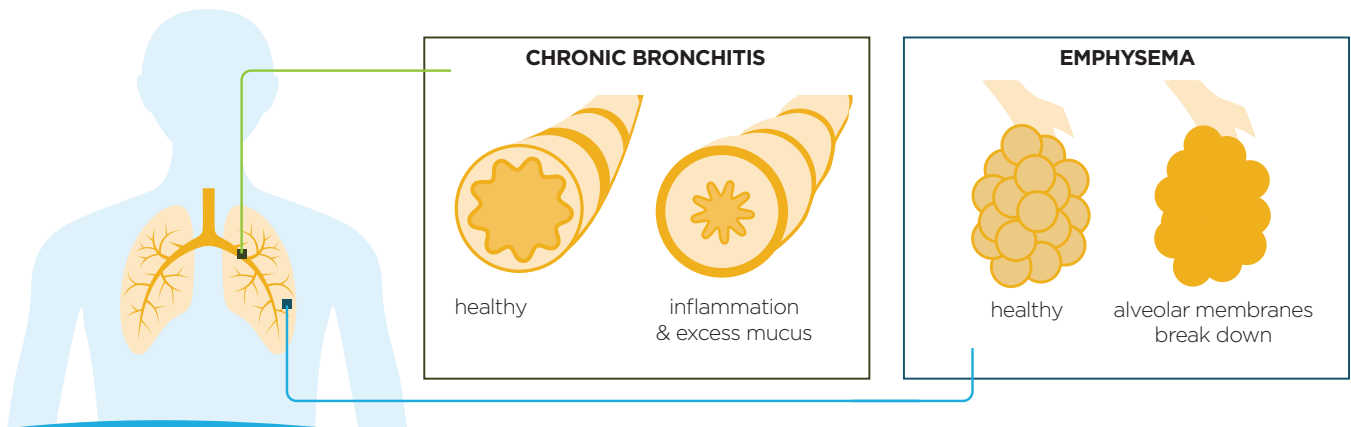


EXCESS SPUTUM



WHEEZING

**CHRONIC OBSTRUCTIVE PULMONARY DISEASE**



**COPD: EMPHYSEMA, CHRONIC BRONCHITIS, AND SYMPTOMS**



## COPD diagnosis is based on:

- **Signs and symptoms:** chronic cough, excess sputum
- **Personal and medical history:** smoking history or exposure to lung irritants, such as secondhand smoke, air pollution, chemical fumes, or dust
- **Test results:** lung function tests, spirometry

Lung function tests measure how much air is breathed in and out, how fast air is breathed out, and how well lungs deliver oxygen to the blood.

The main lung function test for COPD is spirometry but other tests, such as a lung diffusion capacity test, also might be used. Spirometry can detect COPD before symptoms become severe. It is a simple, non-invasive breathing test that measures the amount of air a person can blow out of the lungs (volume) and how fast he or she can blow it out (flow). The test helps detect COPD and its severity and can also find out whether other conditions, such as asthma or heart failure, are causing the symptoms.

### Other tests may include:

- Chest x-ray or chest CT scan
- Arterial blood gas test



There currently is no cure for COPD. Lifestyle changes and treatments can greatly improve a patient's quality of life and allow them to stay more active and slow the progression of the disease.

### Treatment options may include:

- Medications: bronchodilators, inhaled steroids, anti-inflammatory agents
- Pulmonary rehabilitation
- Physical activity training
- Oxygen supplementation
- Surgery

### Lifestyle changes may include:

- Avoiding lung irritants, such as smoke and pollutants
- Getting ongoing care, including:
  - Visiting a healthcare provider regularly
  - Taking medications as directed
  - Getting flu (influenza), pneumococcal, and COVID-19 vaccines as recommended by a healthcare provider
- Monitoring activities and symptoms
- Preparing for disease flare-ups



# COPD: DIAGNOSIS AND TREATMENT OPTIONS

For more information and resources, visit the National Heart, Lung, and Blood Institute's ***Learn More Breathe Better***<sup>®</sup> website at [COPD.nhlbi.nih.gov](https://COPD.nhlbi.nih.gov).



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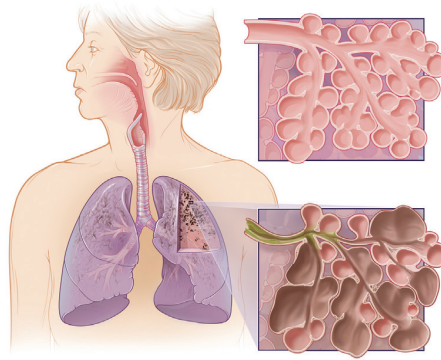
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# LIVING BETTER WITH COPD

By getting ahead of your symptoms and talking about them with your healthcare provider regularly, you can put yourself on the path to a better quality of life.

## WHAT IS COPD?



NORMAL LUNG

COPD LUNG

**Healthy lungs** expand to fill with air and then bounce back to their original shape when air is exhaled, retaining lung structure and moving air quickly in and out. **With COPD**, the air sacs no longer bounce back to their original shape, and the airways can become swollen or thicker than normal. Increased mucus production and partially blocked airways make it even harder to get air in and out.

## WHAT YOU CAN DO:



### QUIT smoking

If you smoke, quitting is the best thing you can do to prevent more damage to your lungs. Ask your provider about new options for quitting. Many resources to help are available online. Visit [smokefree.gov](http://smokefree.gov); [lung.org](http://lung.org); or call **1-800-QUIT NOW** for more information.



### AVOID pollutants

Try to stay away from things that could irritate your lungs, like dust and strong fumes. Stay indoors when the outside air quality is poor, and avoid places where there might be cigarette smoke.



### VISIT your provider

COPD is treatable. Talk to your healthcare provider regularly; follow treatment by taking your medications; and get your flu, pneumococcal, and COVID-19 vaccines as recommended.



### GET support

Caregivers, friends, and family provide an important support network that can help you stay on track with your treatment and identify symptoms. Listen to them, talk with them. They can mean the difference in a successful treatment.

Visit [COPD.nhlbi.nih.gov](http://COPD.nhlbi.nih.gov) for more helpful tips.



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## NOTICE ANY OF THESE SYMPTOMS? TALK TO A HEALTHCARE PROVIDER.

- Constant coughing, sometimes called “smoker’s cough”
- Shortness of breath while doing everyday activities
- Excess sputum production
- Feeling unable to breathe or take a deep breath & wheezing



If you see these symptoms in yourself or a loved one, make an appointment. Acting early is essential to getting control of the disease so you can live better with it.

## GET THE MOST OUT OF YOUR VISIT:

### BE INFORMED

It’s not always easy to get all the information you need in the brief time of a typical office visit. Learn about COPD before your visit so you can be prepared.

### LOG SYMPTOMS

Consider keeping a log of your symptoms for the days or weeks before your appointment and bring it with you. Log details of what you were doing when you experienced any of these COPD symptoms and how long they lasted.

### KNOW RISK FACTORS

- History of smoking
- Long-term exposure to pollution, certain chemicals and dusts
- Some genetic conditions, such as alpha-1 antitrypsin deficiency

Share all the risk factors you may have to help your provider give you the best care.

### KEEP NOTES

Write down any questions you have before the visit so you can remember to ask them. Take notes during the visit, and don’t be afraid to ask the provider to repeat something if you don’t understand it.

### DON’T GO ALONE

If possible, bring a family member or friend with you. Two sets of ears are always better than one when hearing information about your health.



### COPD resources at your fingertips:

**Learn More Breathe Better®**  
website:  
[COPD.nhlbi.nih.gov](https://copd.nhlbi.nih.gov)

COPD Foundation website:  
[www.copdfoundation.org](https://www.copdfoundation.org)

COPD Foundation  
toll-free information line  
for one-on-one support:  
**1-866-316-COPD (2673)**

American Lung Association  
website: [www.lung.org](https://www.lung.org)



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