



A Stronger Pump:

A GUIDE FOR PEOPLE WITH ALL
TYPES OF HEART FAILURE



INFORMATION

TIPS

ILLUSTRATIONS

TRACKING TOOLS

Heart failure zones

DAILY HEART FAILURE SELF-CARE

- Take ALL medicine EXACTLY as prescribed.
- Weigh in AM after you "pee" and before breakfast. Keep daily log. Compare to yesterday's weight.
- Limit sodium (salt) to less than 2,000 mg sodium/day. Do not add salt at the table. Choose low-salt items if eating out. Avoid fast food.
- If advised, restrict total fluid intake to 2 quarts (liters) per day.
- Check for swelling in your feet, ankles, legs and stomach.
- Balance activity with rest periods.
- Assess your Heart Failure Zone and take action for any warning signs (yellow or red zones).

GREEN ZONE GO

You feel pretty good and have:

- No shortness of breath
- No weight gain of more than 2 lbs/day
- No swelling in the feet, ankles, legs or stomach
- No belly bloating or feeling "full" too soon at meals
- No chest pain
- Your normal activity level

- Staying in the green zone is your goal!
- Continue taking all your medicine **NO MATTER HOW GOOD YOU FEEL.** Keep your healthcare team appointments.

YELLOW ZONE CAUTION

Warning signs that your heart failure is NOT in control:

- Weight gain of 2-3 lbs in one day or 5 lbs or more in a week
- Shortness of breath with less effort than usual
- Finding it harder to breathe when lying down
- Needing to sleep upright in a chair
- Waking up during the night feeling short of breath
- Swelling in the feet, ankles, legs and/or stomach
- Feeling tired/no energy
- Increased difficulty with normal everyday activities
- Dry, hacking cough
- Dizziness
- Feeling uneasy ("something's just not right")

WARNING: listen to your body. Call your healthcare team with your symptoms and request a prompt appointment. Report any recent high sodium intake (fast food or eating out a lot).

NAME: _____

PHONE: _____

If you **ACT NOW**, you may be able to get back in **CONTROL** of your heart failure (green zone), avoiding a hospital stay.

RED ZONE STOP AND GET HELP

Signs of severe heart failure requiring emergency help:

- Struggling to breathe – unrelieved shortness of breath at rest
- Wheezing or chest tightness at rest
- Unrelieved or reoccurring chest pain after NTG
- Confusion or not thinking clearly
- Weight gain of more than 5 lbs in 2 days

- **CALL 911 NOW!**
- Go to the ER for evaluation and treatment.
- Always see your doctor, nurse or PA within a week after any heart failure hospital stay!

HEART FAILURE



A STRONGER PUMP

by

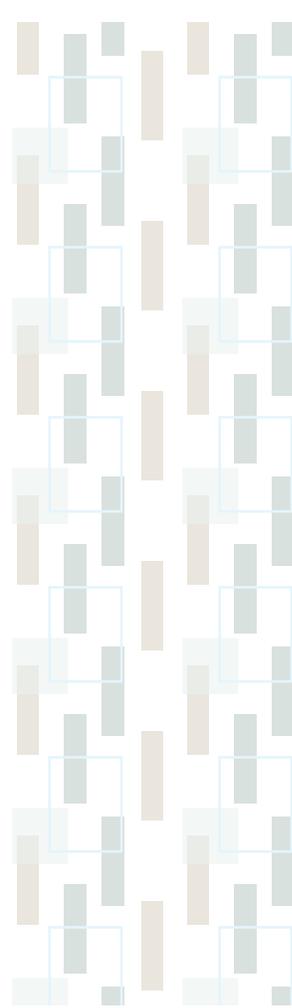
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Over 6 million Americans have chronic heart failure. This book can help you and your loved ones understand and manage heart failure...living a longer, fuller life. You will learn how to:

- > take the medications exactly as prescribed
- > weigh daily to detect fluid buildup
- > avoid excessive sodium intake
- > check for swelling in your feet, ankles, legs and/or stomach
- > balance exercise and rest
- > make less work for your heart by not smoking and getting rid of excess weight
- > control things like high blood pressure, diabetes, obesity, sleep apnea

Refer to the heart zones chart on the left page for a summary of the daily heart failure self-care routines and when to get help. This book should not replace your doctor, nurse, or PA's advice or treatment.



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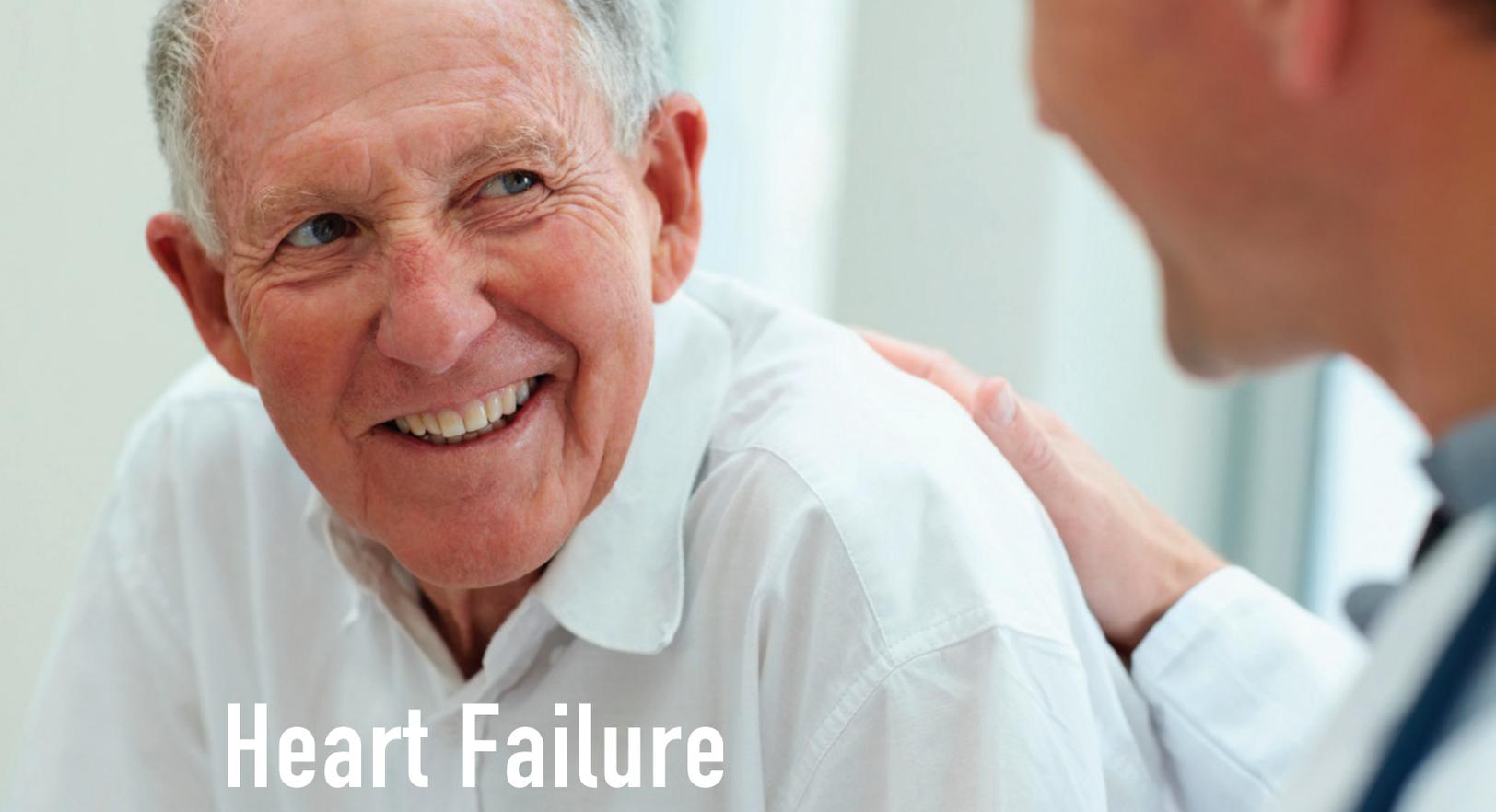
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Heart Failure

A healthy heart pumps out enough oxygen-rich blood to feed all parts of the body. It should fully relax between heart beats to fill up with the incoming blood. Heart failure occurs when there are problems with either pumping and/or filling. Symptoms like shortness of breath, swelling in the belly, hands, legs and feet are common.

Heart failure can range from mild (more common) to severe. There are many factors involved:

- the cause of your heart problem
- the way your heart pumps and fills
- how your body reacts to it
- any extra demands on your heart, like being overweight or having high blood pressure

Most often, heart failure can be controlled with medicines, diet, rest and low-level exercise. Your heart failure symptoms may come and go or, in a few cases, go away completely.

How you may feel

As heart failure gets worse, you may notice some or all of these:

- sudden weight gain** (2 lbs overnight or 3-4 lbs in a day or two)
- swelling of the legs and ankles**
- your diuretics seem less effective**
- swelling, bloating** (you feel full much earlier at meals) **or pain in the belly**
- trouble sleeping unless propped up on 2 or more pillows** (can be caused by problems other than heart failure)
- shortness of breath** (all of the time, with exertion or when waking up breathless at night)
- frequent, dry, hacking cough** (most often when lying down)
- loss of appetite** (or nausea)

You may also get tired from very little effort. This happens when blood flow is sluggish. You may wake up feeling tired or get drowsy in the afternoon. This is even more likely if you are not breathing well when you sleep. Your family may notice snoring or louder snoring than before.

Many of these symptoms can occur with problems other than heart failure. Your healthcare team will check your heart and lungs. Blood tests (and/or a sleep study) may help find out what is wrong.



How your heart works

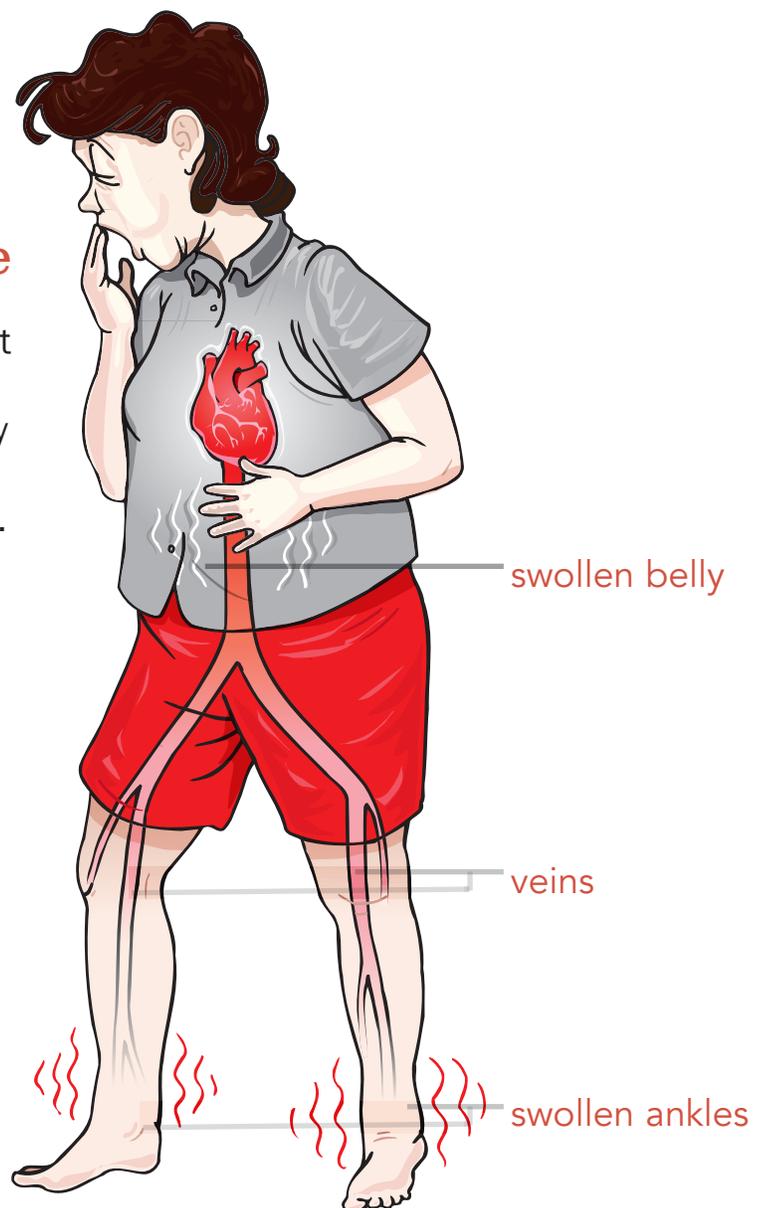
Blood returns from the veins to the **right** side of your heart. It is then pumped to your lungs to pick up oxygen on its way to the **left side of your heart**. The **left** heart pumps the blood out to your body arteries through the main artery (aorta).

If your heart failure is due to pumping weakness, it may start in the **right** or **left** side of your heart. But soon **both** left and right sides are strained.

right heart failure

When the right side of your heart has a pumping problem, blood backs up in your veins. You may not notice it, since veins can stretch and hold the extra blood.

Days or maybe weeks later, you may notice that your legs and ankles are swollen. You may also feel sore or swollen in the upper right side of your belly. And you may feel tired and not want to eat.

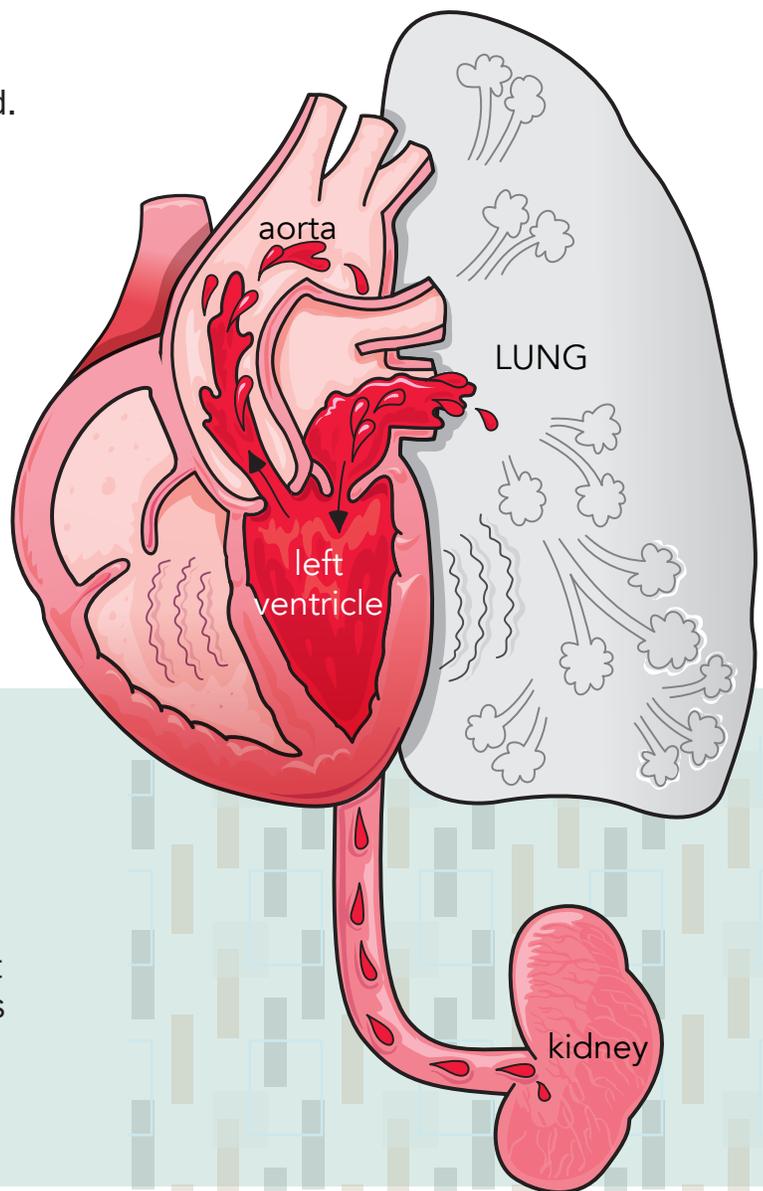


left heart failure

When the left side of your heart does not pump out all the blood it gets, fluid backs up into your lungs. You may:

- > feel short of breath
- > have trouble sleeping if you do not prop up on pillows
- > wake up feeling out of breath
- > have a dry hacking cough

You may also feel swollen or bloated. This is because your body is holding too much fluid. This adds to your heart's workload. Your weak heart has to pump all of this extra fluid along with the blood.



Why your body holds fluid:

A weak heart sends less blood to the kidneys. The kidneys think the body doesn't have enough blood. They start saving more salt and water and pass less urine. This adds more blood volume for the heart to pump.

A sudden weight gain is one sign the kidneys are holding back salt and water in your body. To check for this, **weigh each morning** after you “pee” and before eating or getting dressed. **Write down your weight.**



- > Each time you weigh, make sure your scale is set on a hard surface (not carpet) and adjusted to zero.
- > When checking your weight, think about how well you are eating. If you are eating less and losing pounds, you may not notice a gain from fluid.
- > If you gain 2-3 lbs in one day of normal eating, it is more likely due to fluid rather than food. Call someone from your healthcare team for advice to get rid of this extra fluid before it weakens your heart more. Often, you need more diuretic (“water pill”).
- > Always write down your weight and any diuretics taken in a notebook lined off like this:



Date	Weight	Diuretic Taken

Heart Failure Testing

Your healthcare provider will order an EKG and one or more of these tests to detect, monitor and/or choose the best treatment for you. Often these treatments make you feel better and improve how your heart works.

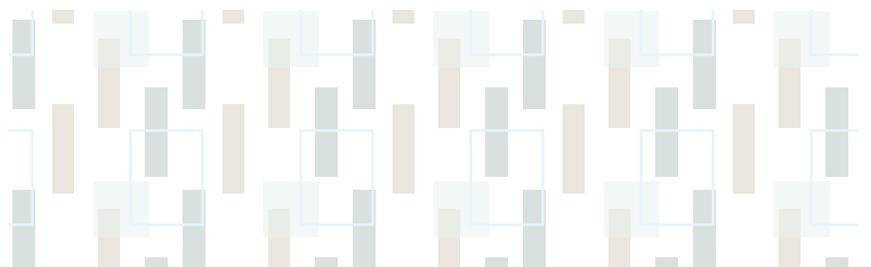
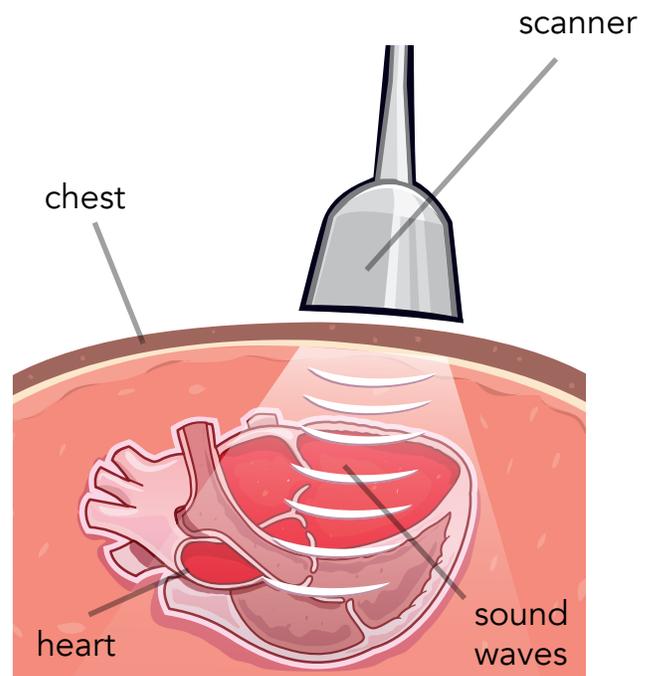
Doppler echocardiogram (ECHO)

An echocardiogram is an ultrasound of your heart. Sound waves (sonography) are sent over your moving heart to show:

- problems with the heart muscle
- how well it pumps and relaxes
- the condition of your heart valves and the sac around the heart

A technician moves a hand-held scanner over your chest, taking pictures and recording them. You may feel some pressure as the scanner is pressed against your chest. Pictures can be made from several angles (two or three dimensional ECHO). These pictures show how the blood moves inside your heart and back and forth across your heart valves.

An echocardiogram also measures the heart's ejection fraction ("EF"). A normal EF is 50% or more.





exercise test

This test records your heartbeat, EKG and blood pressure at rest, during exercise and just after exercise. You may be asked to walk on a treadmill or ride a stationary bike.

As you exercise, your workload is slowly increased to see how your heart responds. You may also be asked to breathe through a tube or mask to measure how much oxygen your body uses.

other tests are sometimes needed

A **cardiac catheterization** (heart cath) may be done to see one or both sides of your heart. Often pictures are made of any narrowing in the heart arteries. **Ultrafast CT* scans** can detect build-up of calcium in the heart arteries. **Multi-slice cardiac CT scans** take X-ray pictures of the heart, blood vessels, lungs and sac around the heart. Sometimes a “dye” is given (contrast) and pictures are made of the heart arteries.

Magnetic resonance imaging (**MRI**) may be needed to find the reason for heart failure. MRI offers more detail about the lower heart chambers. In some cases, an MRI is helpful to find out more about how well the heart pumps.

Nuclear scans can be used. Sometimes a positive emission tomography (**PET scan**) or a **thallium scan** is needed.

Blood tests for biomarkers may give useful detail as well. (BNP or NT-proBNP, cardiac troponin, etc.)

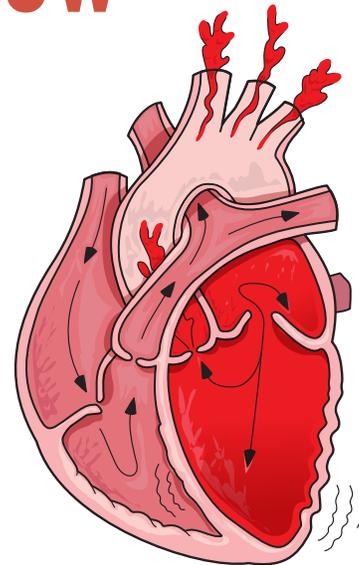
* Computerized tomography

Heart Failure

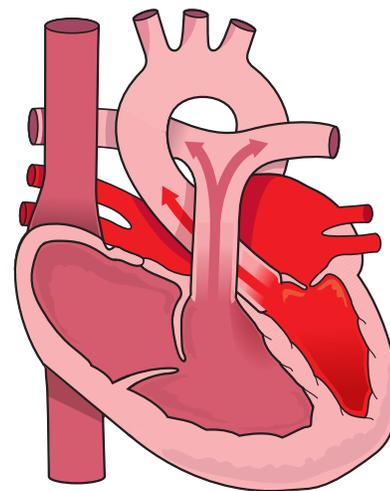
Treatment Overview

Testing helps your healthcare team treat what's going on in your heart. Each heartbeat involves a squeeze (pumping) and time for relaxing (filling). Although pumping problems are more common*, heart failure often includes some of both of these:

- > **weak pumping** (*reduced ejection fraction*) The ejection fraction (EF) is an estimate of the heart's pumping strength. Normal strength is 50% or higher. Less than 50% means reduced heart pumping.
- > **poor filling** (*normal ejection fraction*) Stiff lower chambers do not relax enough for good filling and stretching. If your heart failure is mostly due to poor filling, your EF may be normal (preserved*). The heart muscle pumps well but doesn't relax enough for good filling. Filling problems are common with heart failure due to high blood pressure but can also occur with other heart problems.



weak pumping



stiff heart doesn't relax well for filling

* 2016 and 2017 ACC/AHA/HFSA Focused Updates to: An Update of the 2013 ACCF/AHA Guidelines for the Management of Heart Failure. *Circulation* 2013; 128:1810-1852, *Circulation* 2016; 134:282-293 and *Circulation* 2017; 136(6): e137-e161.

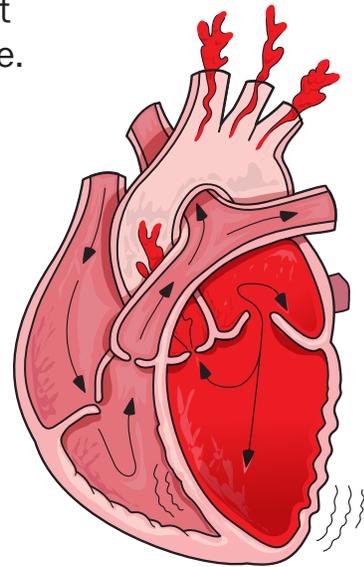
When your body doesn't get enough oxygen-rich blood, stress hormones and nerve signals tell the body arteries to tighten. Tight arteries make it harder for your heart to pump. Stress hormones also keep salt and water from going out in your urine. This means fluid can build up in the tight blood vessels, making even more work for the heart. Extra salt and water in the body will cause thirst but drinking too much fluid will make things worse.

Medicines to relax tight arteries (and remove any extra fluid) will make it easier for your heart to fill and pump out the blood. Most heart failure patients also need to eat less salt to avoid fluid buildup, reduce swelling and breathe easier.

These three types of drugs are commonly used to treat heart failure:

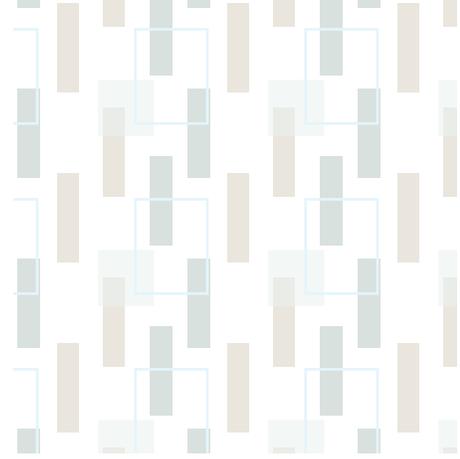
- > **A drug to allow tight blood vessels to relax (Example: ACE inhibitor)** relaxes tight blood vessels helps make the heart's workload easier over time.
- > **A beta- or a beta-and alpha-blocker** also offers many long-term benefits to make your heart's workload easier over time.
- > If fluid overload is present, a **diuretic** helps your kidneys pass the extra fluid out in the urine. Removing this extra fluid reduces the workload on your heart.

See pages 27-37 for more details about these and other drugs used to treat heart failure at home and in the hospital. Your input in reporting possible drug side effects is vital to your healthcare team so they can adjust the dosage or change your medication.



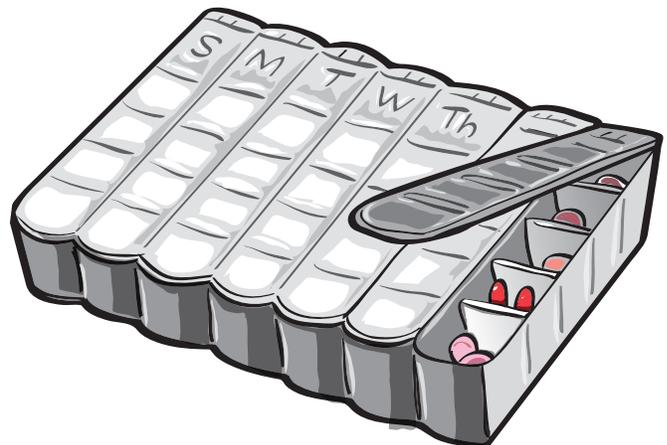


Steps to living well with heart failure



step 1: take your medicines exactly as prescribed

- Have a written schedule and a pill box or another way to remember your medicine.
- Report any side effects to your healthcare team (dizziness, loss of appetite, nausea or changes in mental or sexual function). **Do not stop taking any of your medicine on your own.**
- Take your diuretic in the morning to limit bathroom trips at night. If you take a diuretic twice a day, ask your doctor or nurse about spacing the second dose in the late afternoon.
- If you miss a dose, don't take extra to make up for it. But if you forget your diuretic in the morning, take it later in the day rather than waiting until the next morning.
- Once you feel better, don't stop any of your medicines! Many of them work best together for a good long-term effect on the heart and blood vessels.
- Talk to your doctor, nurse or PA before taking any herbs or other supplements. Some may interfere with your medicines, especially the blood thinner Coumadin[®] (warfarin) or, in a few cases, Pradaxa[®] (dabigatran).



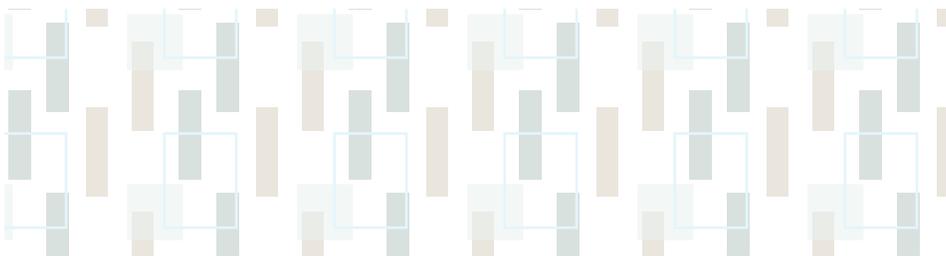


Check the zero point on your scale each time you use it.



step 2: weigh daily and watch for rapid fluid buildup

- When home, always use the same scale. Keep it adjusted to zero. Use it on a hard surface (not carpet) each time. When you travel, make sure you have a good scale to weigh on.
- Weigh yourself each morning. Do this after you “pee”, but before eating or getting dressed. **Keep a written record to take to your healthcare team.**
- Report any rapid weight gain to your healthcare team (2-3 lbs in one day or 5 lbs in a week).
- If you have been eating the same amount of food, a quick weight gain is often a sign that fluid is building up and causing more work for your heart.
- Follow your care team’s advice about a sudden weight gain. You may need more diuretic and/or potassium supplements. **Do not take more without the advice of your healthcare team.**



step 3: eat less salt and limit fluid intake

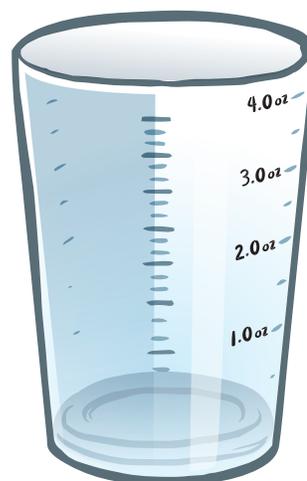
Since foods high in sodium (salt) make the body hold fluid, eat less of them. The average American takes in around 3,300 mg sodium per day.* It's easy to see why, since one teaspoon of table salt has about 2,300 mg of sodium. Most of our sodium intake doesn't come from the salt shaker. We get large amounts in fast or processed food, large restaurant meals and high-sodium spices. Read food labels and learn about packaged foods and the spices high in sodium. Most people with heart failure have to limit sodium to less than 2,000 mg/day.

Many people with heart failure have trouble with their body holding fluid. Being very thirsty is also common because diuretics take away the extra fluid. **Even if you are thirsty, DO NOT** replace all the fluid that diuretics have helped your body get rid of. Use small amounts of hard sugar-free candy to help with a dry mouth.

Your healthcare team may tell you to have no more than 2 quarts (64 ounces) of fluid per day (or less in some cases). This includes **all beverages**, high-moisture foods/fruits, Jell-O®, ice cream and ice cubes (see page 28).

Following your care team's advice about sodium and fluids can help you control heart failure and take less diuretic.

* *What We Eat in America*,
U.S. Department of Agriculture.



Hints to lower sodium in your diet

- **Do not cook with salt** or add salt to foods at the table.
- **Eat fresh vegetables or unsalted canned or frozen vegetables.** These have less sodium than most processed foods. For example:*



Instead Of:

1 cup of regular
canned peas:
400 mg of sodium

Eat:

1 cup of fresh,
cooked peas;
2 mg of sodium

*Sodium content of foods from USDA Handbook #456.

- **Season with fresh or dried herbs, vegetables or no-salt seasonings.**
- **Bake, broil, boil, steam, roast or poach** foods without salt. Eat out rarely, but when you do, order foods cooked without breading, butter or sauces. Ask that no salt be added. Don't eat soups (usually high in sodium). Go easy on the salad dressing as most are high in salt. Don't eat at restaurants that cause you to have a sudden weight gain the next day.
- **Make your own** sauces, salad dressings, vegetable dishes and desserts when you can. Some patients make their own bread to further lower sodium intake.
- **When buying canned fish, low-sodium tuna or salmon is best.** You can use water-packed tuna or salmon if you break it up and soak it for 3 minutes in cold water. Rinse, drain and squeeze out the water.

Keep track of your sodium intake each day. Make it a habit to buy and only eat foods with no more than 100 mg of sodium in the serving size you consume. (Or follow the list on the next page to limit sodium.)

Low-sodium foods—what you CAN eat (✓)

fruits and vegetables

- ✓ fresh or frozen (check for sodium)
- ✓ canned (unsalted)



drinks

- ✓ fruit juices, fresh or frozen
- ✓ canned low-sodium or no salt added tomato and vegetable juice
- ✓ instant breakfast (all flavors but eggnog)—limit to 1 cup/day
- ✓ frozen concentrate or fresh lemonade

dairy choices

- ✓ up to 3 cups (24 oz) of your daily fluid allotment in milk (1%, skim or homemade buttermilk using baking buttermilk powder)
- ✓ no-salt added cottage cheese
- ✓ ricotta—part skim, up to ½ cup (4 oz) a day
- ✓ up to 2 Tbsp (1 oz) a day—hard cheeses like unprocessed Swiss, part-skim Mozzarella, Neufchâtel or string
- ✓ soft margarine or mayonnaise (up to 2 Tbsp [1 oz] a day)
- ✓ non-fat and low-fat sour cream

meats, poultry, fish & meat substitutes

- ✓ fish, fresh or frozen (not breaded); canned tuna and salmon (unsalted or rinsed)
- ✓ chicken or turkey (not processed in salt solution)
- ✓ lean cuts of beef, veal, pork, lamb
- ✓ dried beans, peas, lentils (not canned unless low-sodium)
- ✓ nuts or seeds (unsalted, dry roasted)
- ✓ unsalted peanut butter, up to 2 Tbsp a day
- ✓ tofu (soybean curd)

* Using homemade breads (no self-rising flour) can reduce sodium intake further.

breads, cereals, grains

- ✓ loaf bread and yeast rolls (3 slices/ day)*
- ✓ melba toast, matzo crackers
- ✓ pita bread, taco shells or corn tortillas
- ✓ cooked cereals (avoid instant): corn grits, farina (regular), oatmeal, oat bran, cream of rice or wheat
- ✓ puffed rice or wheat, shredded wheat (or any cereal with 100–150 mg sodium—limit to 1 cup/day)
- ✓ wheat germ
- ✓ popcorn (no salt or fat added)
- ✓ rice (enriched white or brown) or pasta

cooking ingredients, seasonings

- ✓ corn starch, tapioca
- ✓ corn meal or flour (not self-rising)
- ✓ fresh or dried herbs, salt-free herb seasonings
- ✓ lemons, limes, onions, celery
- ✓ fresh garlic, ginger or vinegar
- ✓ Louisiana-type hot sauce (1 tsp/day)
- ✓ low-sodium baking powder, yeast, onion or garlic powder
- ✓ tomato paste, unsalted tomatoes, unsalted tomato sauce
- ✓ water chestnuts
- ✓ carob powder, cocoa powder
- ✓ low sodium salad dressings

sweets

- ✓ flavored gelatins
- ✓ frozen juice bars, fruit ice, sorbet, sherbet
- ✓ sugar, honey, molasses, syrup
- ✓ jelly, jams, preserves, apple butter
- ✓ graham and animal crackers, fig bars, ginger snaps

Read food labels

Until you learn how to eat a low-sodium diet, add up the sodium content in all the foods and beverages you take in per day. Be sure it is less than your doctor or nurse has advised.

Tips to help you:

- Buy products labeled low-sodium, sodium-free, or very low sodium. At present, a “low-sodium” food label means 140 mg of sodium* or less per serving size.
- Pay attention to the serving size as you figure the amount you plan to eat. Sometimes the food label shows the sodium mg for only a tiny amount of food rather than a common serving size. Labels like “healthy”, “reduced sodium”, “unsalted”, “no salt added” or “without added salt” can be very misleading.
- Always count the sodium content for the amount of food you plan to eat! Spread out your sodium in healthy foods that are filling. For example, choose a meat sandwich rather than a pickle.
- Studies show that 75-80% of our daily sodium intake comes from processed and restaurant foods. When possible, avoid eating out. Ask family or friends not to add salt to your food. Almost all fast food is high in salt. Don’t buy convenience foods like prepared or skillet dinners, deli food, cold cuts, hot dogs, most frozen entrees or canned soups.

* www.fda.gov

Nutrition Facts			
Serving Size 1 hotdog link (57 grams)			
Servings Per Container 8			
Amount Per Serving			
Calories	170	Calories from Fat	140
% Daily Value*			
Total Fat	16g		25%
	Saturated Fat 5g		25%
	Trans Fat 0g		
Cholesterol	45 mg		15%
Sodium	480 mg		20%
Total Carbohydrate	<1g		0%
Protein 6g			
Vitamin C	20%	• Iron	6%
Calcium	6%		
* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:			
	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g
1g Fat = 9 calories			
1g Carbohydrates = 4 calories			
1 g Protein = 4 calories			

High-sodium foods—what NOT to eat (✗)

vegetables

- ✗ salted canned vegetables
- ✗ sauerkraut

bread, cereals, grains, starches

- ✗ self-rising flour and corn meal
- ✗ prepared mixes (Ex: waffle, pancake, muffin, cornbread and all frozen waffles)
- ✗ instant cooked cereals

dairy products

- ✗ buttermilk (store-bought)
- ✗ canned milk (unless diluted and used as regular milk)
- ✗ egg substitute (limit to ½ cup/day)
- ✗ eggnog (store-bought)
- ✗ salted butter and margarine with transfat
- ✗ certain cheese (American and other processed cheese, blue cheese, Parmesan, feta and regular cottage cheese) with more than 200 mg/serving



soups

- ✗ bouillon (all kinds)
- ✗ dry soup mixes
- ✗ canned broth and soups* (with more than 350 mg sodium/serving)

drinks

- ✗ athletic drinks (such as Gatorade®)
- ✗ canned tomato or vegetable juice (unless unsalted)

sweets

- ✗ prepared mixes or store-bought pies, puddings, cakes, muffins, etc.

* Even reduced sodium canned soups can be quite high in salt. Check the label.

meats and meat substitutes

- ✗ canned meats and fish (sardines, unrinsed tuna and salmon)
- ✗ cured meats (Ex: dried beef, bacon, corned beef) and any meat product processed with salt (ham, some chicken and pork)
- ✗ all types sausage and hot dogs (Ex: beef, pork, chicken, turkey, Polish sausage, hot dogs, knockwurst)
- ✗ rotisserie chicken
- ✗ sandwich meats (bologna, salami, olive loaf, etc.)
- ✗ regular peanut butter
- ✗ salted nuts

cooking ingredients, seasonings, condiments, snacks

- ✗ fermented miso and cooking wine
- ✗ pre-seasoned mixes for tacos, spaghetti, chili, etc.
- ✗ coating mixes
- ✗ pre-seasoned convenience foods
- ✗ soy, teriyaki or Asian fish sauce
- ✗ baking soda, baking powder (use low-sodium type)
- ✗ olives, pickles (dill, sour, sweet gherkins)
- ✗ pretzels, chips, skins, etc.
- ✗ light salt, seasoning salt, sea salt, meat tenderizer, garlic salt, monosodium glutamate (MSG), kosher salt, celery salt, onion salt, lemon pepper



Note: Check the label. Use less than 2 Tbsp a day of tomato sauce (unless unsalted), catsup, chili sauce, BBQ sauce, mustard or salad dressings.

Follow your healthcare team’s advice about limiting salt and fluid intake. Most people need to limit daily sodium to less than 2,000 mg to avoid fluid buildup.

Your healthcare team may ask you to limit liquids to 2 quarts (64 oz) a day. The liquid content of high moisture food has to be counted as well as all beverages, liquid with medicine and ice cubes. Ice cubes usually melt to half their size: 4 oz ice=2 oz fluid. Refer to the moisture content of the food examples in this list. Ask your healthcare team if you need more help keeping your total fluid intake to 2 quarts.

Food examples of liquid content/serving size:

FOOD	LIQUID	FOOD	LIQUID
½ cup ice cream or sherbet	2 oz	15 grapes	1 oz
3 oz popsicle	2 oz	½ cup cherries or medium-size lemon	2 oz
½ cup fruited Jell-O®	3 oz	9 inch banana or medium-size peach	2.5 oz
½ cup pudding or custard	3.5 oz	½ cup applesauce, canned peaches, pears or pineapple	3 oz
1 cup low-sodium broth-based soup	7 oz	½ cup fruit cocktail	3.5 oz
1 cup yogurt, low-sodium cream soup or can of nutritional supplement	6 oz	Medium-size apple, nectarine, orange, or 1 cup strawberries	4 oz
medium-size pear	4.5 oz		
1 cup watermelon	5 oz		



Even if you are NOT told to restrict fluids, avoid large amounts of high moisture foods.

step 4: find the right balance in exercise and rest for you

- **Rest throughout your day.** Put your feet up for a few minutes throughout your day. Consider a nap after lunch.



- **After talking with your doctor, nurse or PA, begin walking or another exercise that you enjoy.** Exercise often lessens bad feelings and gives you more energy and quality of life. Walking on a treadmill, bicycling and swimming allow you to use the large muscle groups. Find an exercise that doesn't make you too tired and one that doesn't keep you from talking while doing it. Don't lift really heavy objects. Strength training is good but ask your healthcare team before you start.

step 5: make less work for your heart when you can

- Reduce high blood pressure.** Ask your doctor or nurse for your blood pressure goal and how to reach it.
- Get rid of any excess body fat.** Find healthy ways to lose fat (if needed) and keep your ideal body weight. Bodies that are too large put more demand on the heart.
- Control diabetes by keeping your blood sugar (A1C level) in the range your doctor or nurse suggests.** Ask if any of your diabetic drugs are likely to lead to fluid buildup.
- Stop smoking!!!** All tobacco products tighten body arteries and make more work for your heart. Talk to your healthcare team if you need help quitting.
- If you snore or are sleepy throughout the day, tell your healthcare team.** A sleep study is often done to see if you have pauses in breathing (sleep apnea).

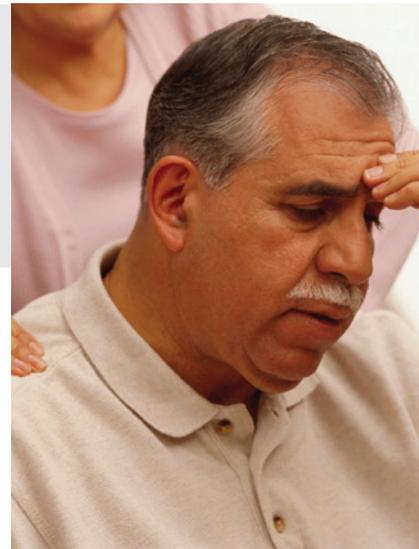
Rest, Exercise and Make Less Work for your Heart

STEPS TO LIVING WELL WITH HEART FAILURE:

Ask your healthcare team if you can have alcohol.

Since alcohol weakens the heart, heart failure may improve if you stop drinking.

- Reduce emotional stress.** You may feel depressed, angry or anxious because you have heart failure. Talking about your feelings, exercise, meditation and/or medicine may help.



- Avoid temperature extremes.** The body works harder to keep a normal temperature when you're too hot or cold.

- Reduce high cholesterol levels** to prevent fatty buildup and damage to your arteries. Many need to take a “statin”, omega-3 fatty acid, or another anti-cholesterol drug.

- Stay away from people who have colds or flu.** Ask your healthcare team to keep you up-to-date with flu and pneumonia vaccines.

- Avoid blood clots.** Regular walking and not wearing garters or hose with tight tops help improve blood flow in the legs. Your healthcare team may also tell you to wear special stockings. An irregular heart rhythm (atrial fibrillation) can occur along with heart failure, adding to the risk of a blood clot. You may be asked to take 1 or more drugs to prevent blood clots:

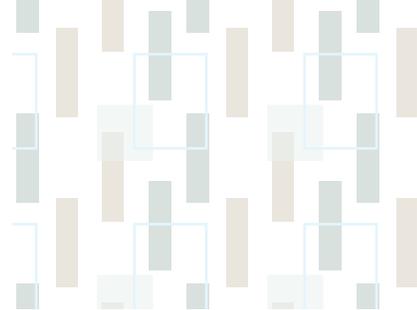
- > aspirin
- > an anti-platelet drug like Plavix[®] (clopidogrel), Effient[®] (prasugrel) or Brilinta[®] (ticagrelor)

OR

- > a ‘blood thinner’ like Coumadin[®] (warfarin), Eliquis[®] (apixaban), Pradaxa[®] (dabigatran), Xarelto[®] (rivaroxaban) or Savaysa[®] (edoxaban).



Heart Failure Self-Care in Review



You have a very important role in heart failure control. Having a partner who supports you AND having a team of healthcare providers that specialize in heart failure can be very helpful. Write down what you are told for home care in the space below.

Take your heart failure medicines exactly as prescribed.

Keep a medicine chart. Note directions on your prescription bottles. Some may ask you to increase the dosage gradually.

Name	Dose	How Often

Weigh daily.

Using the same scale and amount of clothing, weigh first thing each morning after you “pee”. Keep a written record. Follow your healthcare team’s instruction if you have rapid weight gain.

2-3 lbs in one day **or** 5 lbs in one week **or** _____

Limit salt intake: 2000 mg/day **or** _____

Limit fluid: ___ 2 quarts/day (64 oz) **or** as your MD directs: ___ quarts/day

Other diet advice: _____

Find the right balance in exercise and rest.

Ask your healthcare team about these exercises:

- walking
- swimming
- bicycling
- treadmill
- elliptical

Make it easier on your heart by:

- not** smoking
- controlling high blood pressure, diabetes or breathing problems with sleep
- getting rid of excess body weight

Call your doctor, nurse or PA if you have any of these new symptoms (or if they become more severe):

- Weight gain of 2-3 lbs in one day or 5 lbs in a week
- Shortness of breath with less effort than usual
- Finding it harder to breathe when lying down
- Needing to sleep upright in a chair
- Waking up during the night feeling short of breath
- Swelling in the feet, ankles, legs and/or stomach
- Feeling tired/energy not there
- Increased difficulty with normal everyday activities
- Dry, hacking cough
- Dizziness
- Feeling uneasy (“something’s just not right”)

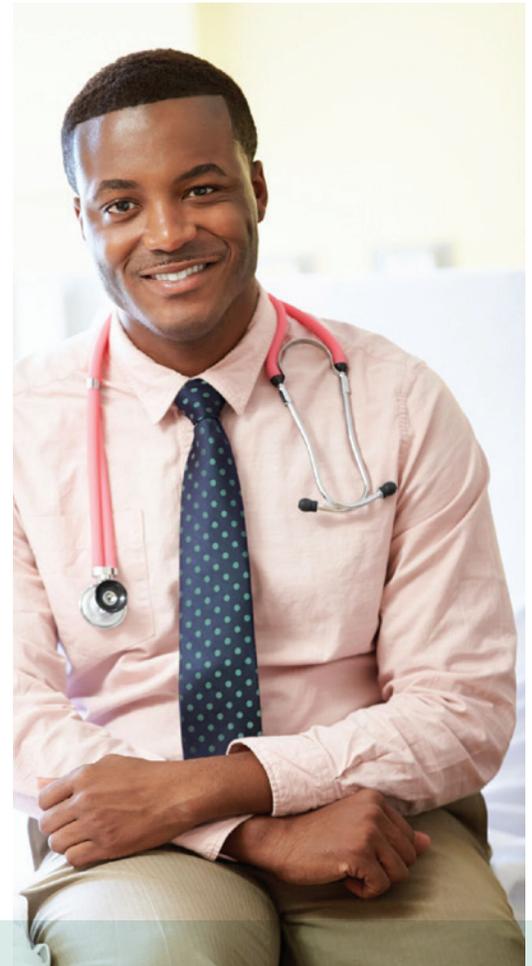
**Go to the ER (and let your doctor know)
if you have any signs of severe heart failure:**

- Struggling to breathe or unrelieved shortness of breath at rest
- Wheezing or chest tightness at rest
- Unrelieved or reoccurring chest pain after taking nitroglycerin
- Confusion or not thinking clearly
- Weight gain of more than 5 lbs in 2 days

**Keep appointments for blood tests
and other follow-up.**

- Electrolytes (sodium [Na+] and potassium [K+])
- Protime (PT) with INR (if on Coumadin® [warfarin])
- Thyroid blood level and eye, liver and lung exams (if on amiodarone to control heart rhythm)
- Other testing: _____
- Next appointment: _____

Tell your healthcare team about anything that bothers you during daily activity. Let them know if symptoms are keeping you from doing things you'd like to do.



NOTES:



Heart Failure Medicines / Procedures

Your healthcare team uses guidelines* that show which drugs and procedures work best to control heart failure over time. Your healthcare team tailor the guideline to:

1. your medical history
2. how your heart failure symptoms affect your activity and
3. test results that show how well your heart fills and pumps blood (ejection fraction)

The guidelines allow you to benefit from how other people with similar heart problems have fared. But how you respond to a drug or treatment is always the focus of your plan of care.

You play a key role in the day-to-day treatment of heart failure. Refer to the heart zones chart on the inside front cover as a reminder of the heart failure daily self-care routines and how to know when you need medical help. When you report early heart failure warning symptoms (“**yellow heart zone**”), your healthcare team can often intervene to prevent an ER or hospital stay. If you have acute symptoms (**the “red heart zone”**), call 911 and go to the ER immediately.

* 2016 and 2017 ACC/AHA/HFSA Focused Updates to: An Update of the 2013 ACCF/AHA Guidelines for the Management of Heart Failure. *Circulation* 2013; 128:1810-1852, *Circulation* 2016; 134:282-293 and *Circulation* 2017; 136(6): e137-e161.



Medicines

These three types of drugs are often used at the outset of heart failure:

- **A drug to allow tight blood vessels to relax (Examples include 1 of these: ACE inhibitor, an ARB or an ARNI).** Each of these help make the heart's workload easier over time.
- **A beta- or a beta-and alpha-blocker** offer many long-term benefits that also make your heart's workload easier over time.
- If you have fluid overload, a **diuretic** helps your kidneys pass the extra fluid out in the urine. Removing this extra fluid reduces the workload on your heart.

A brief description follows for these and other drugs that help control heart failure. Learn more about each of those you are taking. Refer back to this section or written resources from your healthcare team when you are given a new drug.

Report any side effects or concerns to your healthcare team. Some side effects can occur at the beginning of a new drug(s) but go away with time. If side effects persist, dose changes or a different drug may be used. **Do not change the dosage or stop a drug without your healthcare team's input.**





ACE inhibitor (ACEI)

An **angiotensin-converting enzyme inhibitor (ACEI)** allows tight blood vessels to relax making less work for the heart over time. Most people start by taking an ACE inhibitor. If you feel weak, dizzy or have a cough that seems to hang on, tell your doctor or nurse. A dosage or drug change may be needed.

ACEI



Angiotensin II Receptor Blocker (ARB)

An **ARB** is often used to relax blood vessels if someone can't tolerate an ACEI. Most people start by taking small doses of an ACEI inhibitor. Look at your prescription dosage directions carefully. Your healthcare team is likely to increase the dosage over time until you reach the target dose (or have side effects). Examples of ARBs include: Cozaar® (losartan), Atacand® (candesartan) and Diovan® (valsartan).

ARB

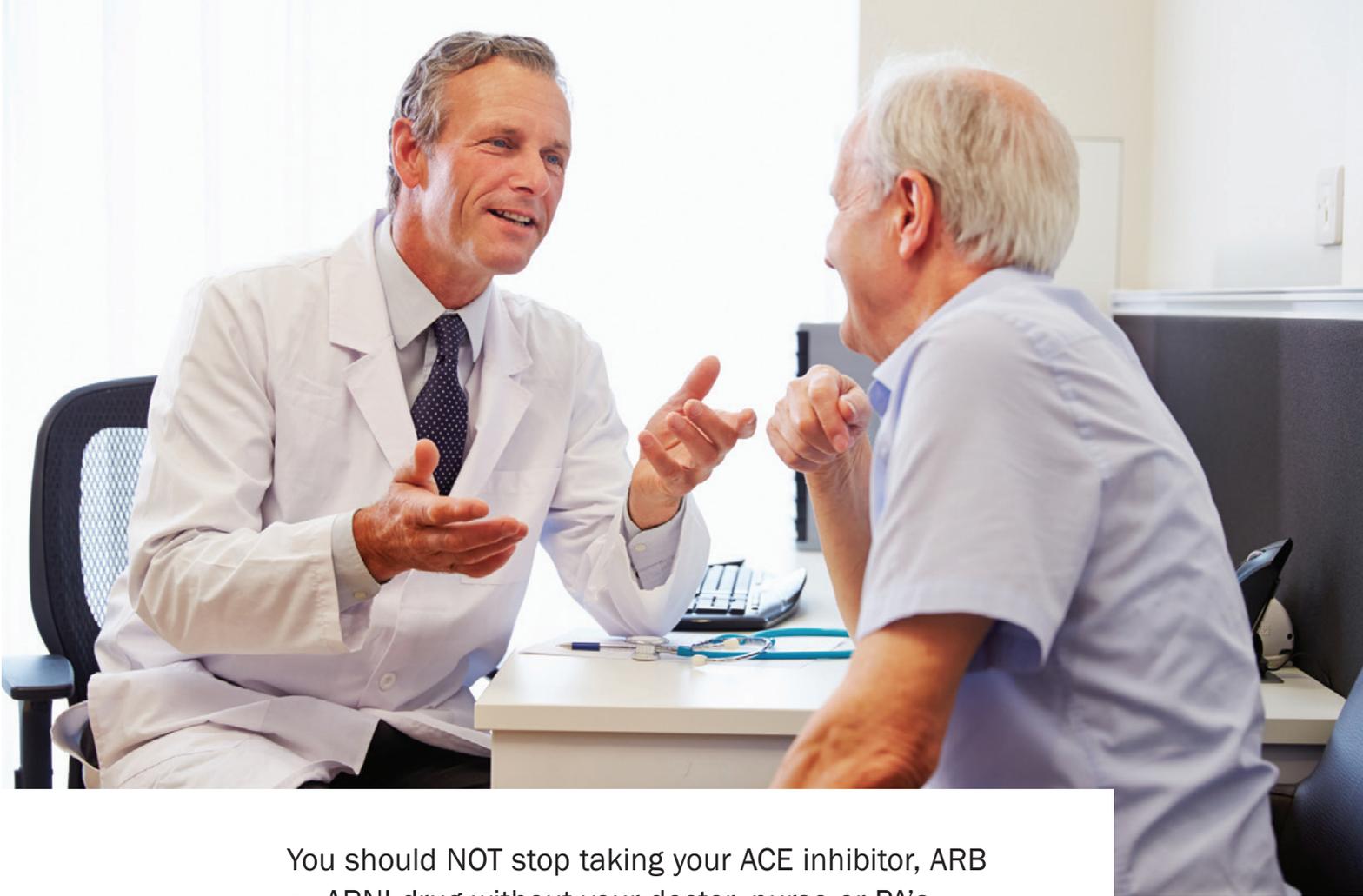


Angiotensin II Receptor Blocker Neprilysin Inhibitor (ARNI)

An **ARNI** has a similar benefit in relaxing tight blood vessels as ACEIs and ARBs. Some patients benefit from being switched to an ARNI after they become stable on an ACEI or ARB. Entresto® (sacubitril and valsartan) is one example of an ARNI. A waiting period of 36 hours is the norm after the last dose of an ACEI before starting an ARNI.

ARNI





You should NOT stop taking your ACE inhibitor, ARB or ARNI drug without your doctor, nurse or PA's advice, no matter how good you feel. The benefits to the heart are very helpful in the long-term and should not be interrupted.

Non-steroidal anti-inflammatory drugs (NSAIDs) interfere with the benefits of an ACE inhibitor, an ARB (or an ARNI) and can worsen heart failure by causing fluid retention. Talk with your doctor, nurse or PA before you take any NSAIDs, even over-the-counter ones like ibuprofen, Advil®, Motrin®, Aleve® and other arthritis drugs.



beta- and alpha-blockers

Beta- and alpha-blocker drugs block the effect of certain nerve signals and hormones (adrenaline and norepinephrine). When these are blocked, body arteries relax and your heartbeat slows down. As the heart pumps more blood to your kidneys, sodium and extra fluid are passed in the urine. Heart failure symptoms are likely to improve after 2 to 3 months.

When you first begin to use a beta-blocker, side effects such as holding fluid, feeling more tired, or a slower heartbeat or dizziness may occur. These side effects often stop and do not prevent long-term use of a beta-blocker.

selective
beta-blockers

Zebeta®
(bisoprolol)
Toprol-XL®
(metoprolol
succinate)

Coreg®
(carvedilol)

beta- and
alpha-blockers

Taking an **ACE inhibitor** (or a similar drug) and/or **beta-blocker** improves heart failure over time (months and years).

Studies show that people with a weak heart muscle (ejection fraction <40%) will live longer if they take an ACE inhibitor (or ARB or ARNI) as well as a beta-blocker.

Low doses are often used at first with slow increases (every 2 to 4 weeks) to get the most benefit with the least side effects.



Vasodilators

Vasodilators may be used to relax tight blood vessels in some heart failure patients. **Hydralazine** (Apresoline[®]) is a vasodilator that relaxes body arteries and is often used in high blood pressure. A long-acting nitrate (**isorbide dinitrate**) mostly relaxes the veins in your body. Often vasodilators are used when one can't tolerate an ACE inhibitor, ARB **or** ARNI.

Hydralazine and a long-acting **nitrate** are sometimes used together. They may be given as 2 separate pills when dosage changes of each are needed to relax the arteries and veins. One company combines a fixed dosage of both drugs (hydralazine and a long-acting nitrate) into a single pill (Bidil[®]).

Vasodilators



Aldosterone-blockers

Aldosterone-blockers also help keep heart failure from getting worse by blocking an artery-tightening stress hormone called aldosterone. Spironolactone (Aldactone[®]) and eplerenone (Inspra[®]) are 2 examples. Besides helping relax blood vessels, these drugs also have a mild diuretic effect. They are known as 'potassium-sparing' because they don't wash out potassium (K⁺) like the usual heart failure diuretics.

Blood tests to monitor potassium are needed, especially after the first 7 days of taking Aldactone[®] or Inspra[®]. Talk to your care team if you notice breast tenderness as this may be a side effect of Aldactone[®] and is less common with Inspra[®]. The guidelines show that getting good control of high blood pressure and/or taking an aldosterone-blocker can be very helpful when your heart doesn't relax well enough for good filling.

Aldosterone-blockers



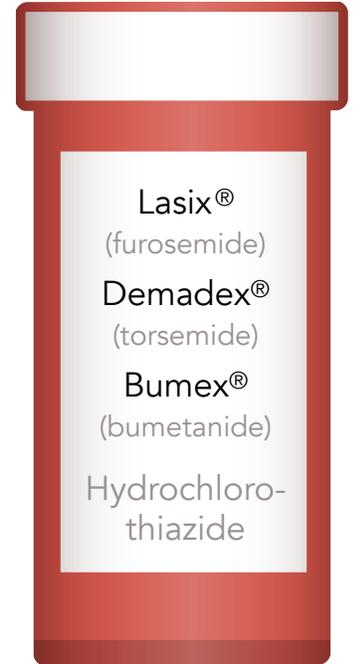


diuretics (and potassium supplements)

Diuretics help the kidneys get rid of fluid buildup in the blood and body tissues. Diuretics can also decrease fluid in the lungs and help you breathe more easily. Loop diuretics have a strong effect and make it easier for minerals (and water) to be released by the kidneys into the urine. Examples of loop diuretics often used in heart failure include: Lasix® (furosemide), Bumex® (bumetanide) and Demadex® (torsemide). Diuretics are usually taken in the morning so the effect wears off before bedtime.

When the heart is not pumping well, the kidneys hold back fluid that would have gone out in the urine. This extra fluid makes more work for the heart. Taking a daily diuretic and limiting sodium (salt) help prevent this fluid buildup. Most heart failure patients are told to call their healthcare team if they have a 2-3 lb weight gain overnight

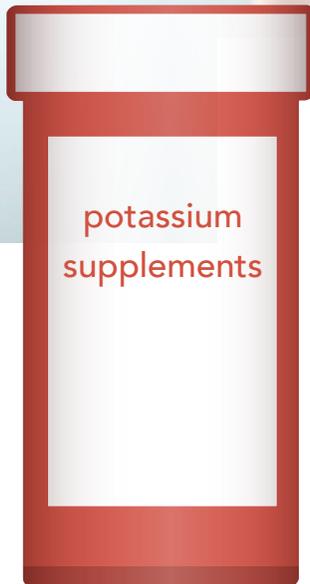
diuretics



example:

Date	Weight	Diuretic Taken
11/6	152 lbs	20mg Lasix® (furosemide) tablet
11/7	156 lbs	40mg Lasix® (furosemide) tablet
11/8	151 lbs	20mg Lasix® (furosemide) tablet

Always follow your doctor, nurse or PA's advice about diuretics. Taking too much diuretic on your own can cause serious dizziness and low blood pressure as well as life-threatening heart rhythm problems. If you are urinating a lot, but still holding fluid, eat LESS SALT, stop eating out, and notify your care team.



Your body needs potassium. Heart rhythm depends on a normal blood potassium (K^+). Many diuretics cause a loss of potassium in the urine. Often, food alone can't replace the amount of potassium removed by the diuretic. A blood test is used to see if potassium supplements are needed. Most people who need supplements take them with their meals.

Blood tests also show if kidney function changes over time. This can happen with heart failure, causing you to need less potassium. Some people with heart failure **do not** need any extra potassium. They are told to avoid salt substitutes and sodium-free bouillon since both are high in potassium.

Remember—diuretics send extra body fluid out in the urine, often washing out potassium at the same time.

Regular blood tests for potassium are needed to see if you need to eat more high-potassium foods or if you should avoid those foods. Do what your doctor, nurse or PA tells you to keep your potassium within healthy levels.

High potassium foods



dried fruits	raisins, prunes, apricots, dates
fresh fruits	bananas, watermelon, cantaloupe, oranges, kiwi, nectarines
fresh vegetables	avocados, potatoes, broccoli, greens, spinach, tomatoes, mushroom
dried vegetables	beans, peas
fresh juices	orange
canned juices	prune, apricot

NOTE: Avoid canned juices, like tomato and V-8[®], that contain salt. Read all labels for salt, sodium or sodium compounds (or NaCl, as salt is often written).

salt substitutes or sodium-free bouillon

(Often high in potassium)

NOTE: Check with your healthcare team before using salt substitutes or sodium-free bouillon. Most have a lot of potassium and in some people, too much potassium can be dangerous.



Other drugs sometimes used in heart failure:

Ivabradine (Corlanor®) is a newer drug that slows the resting heart rate of a normal heart rhythm in a different way from a beta-blocker. You may hear it called the “funny” (I-f) channel. Studies show **ivabradine** can reduce the number of hospitalizations in some heart failure patients. Keeping your resting heart rate on the slower side of normal allows more rest between heartbeats. Your healthcare team needs to hear if you feel any new symptoms of weakness, dizziness or fatigue that might mean your heart rate is too slow.

Anti-platelet drugs or an **anticoagulant (“blood thinner”)** can help prevent blood clots in heart failure. Examples of anti-platelet drugs include aspirin, clopidogrel (Plavix®), prasugrel (Effient®), or ticagrelor (Brilinta®).



Anti-platelet



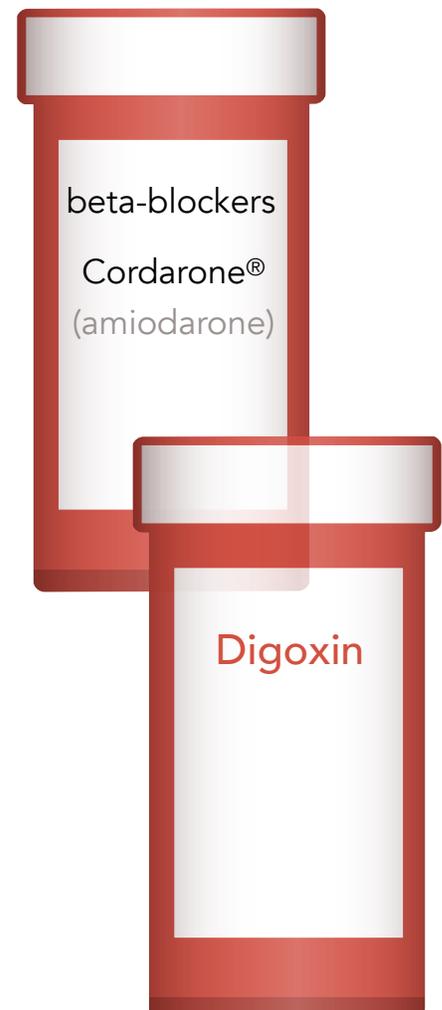
Until recent years, Coumadin® (warfarin) was the only oral **anticoagulant**. The dosage of Coumadin must be changed based on frequent blood clotting tests. Newer oral anticoagulants include dabigatran (Pradaxa®), rivaroxaban (Xarelto®), apixaban (Eliquis®), and edoxaban (Savaysa®). Blood clotting tests are **not** needed to determine the dosage of these newer oral anticoagulants.

Anticoagulants



Anti-arrhythmic drugs may be needed in heart failure to control or prevent an abnormal heart rhythm. There are 4 types of antiarrhythmic drugs. One is beta-blockers and the other 3 affect the flow of sodium, potassium, or calcium in the heart's electrical system. Ask your healthcare team what to expect with any new antiarrhythmic drug. Follow-up testing is needed for many anti-arrhythmic drugs, especially with amiodarone (Cordarone®).

Anti-arrhythmics



Digoxin has been used to help a weak heart pump better or for irregular heart rhythms such as atrial fibrillation. If your doctor has ordered Digoxin, watch for signs of build-up in the body. These can include loss of appetite, distaste for food or a bad taste in the mouth, nausea or vomiting, blue or yellow vision, skipped heartbeats, palpitations or rapid beating.



in-hospital drugs or procedures

IV medicine

Sometimes intravenous (IV) drugs are used for short-term relief of severe or sudden onset heart failure. IV diuretics can help the kidneys quickly remove extra fluid. Drugs to prevent blood clots (example: Heparin) can be given by IV in the hospital. Blood tests are used to monitor the dose.

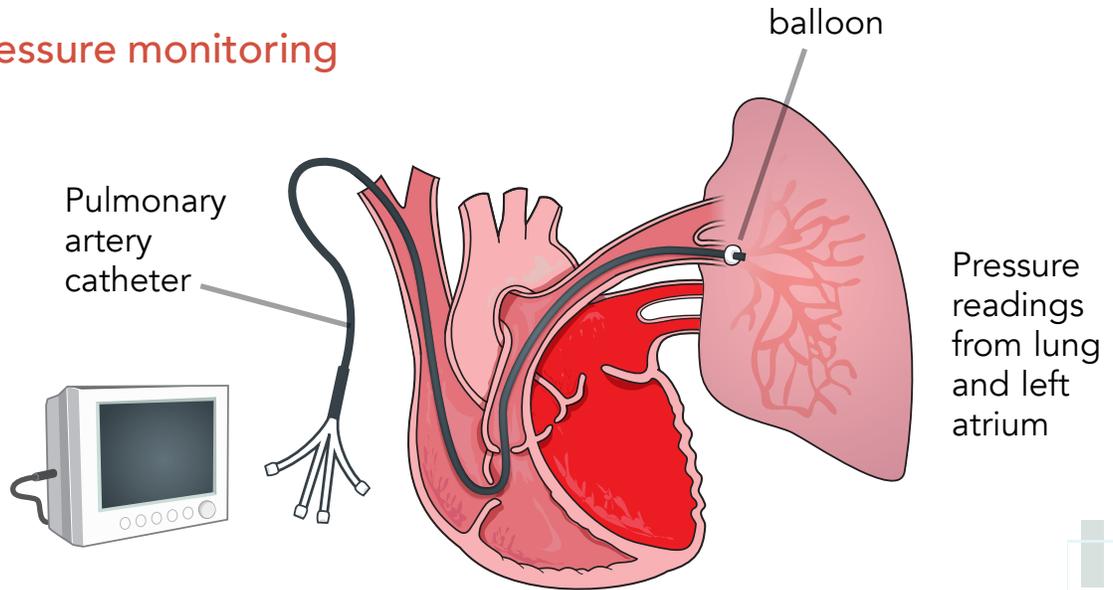
IV drugs like dobutamine and milrinone can make your heart beat stronger. IV nesiritide (Natrekor®) can make it easier for your heart to pump by relaxing your arteries and causing your kidneys to remove extra fluid.

These drugs are given through a small tube in your vein. A pump controls how much medicine you get. Blood pressure checks are often needed when you get these IV drugs.

Ultrafiltration

Sometimes a procedure called ultrafiltration is used to remove the extra fluid when diuretics and other treatments aren't working. Ultrafiltration involves passing the blood through a special filter so excess salt and fluid can be removed.

Pressure monitoring



Pressure readings inside a lung artery can help guide treatment in acute heart failure. A small catheter with a balloon on the tip can be guided through an upper body vein into the right side of the heart and out into a small branch of the lung (pulmonary) artery. The bedside monitor is connected to the catheter for continuous right heart blood pressure readings. The nurse can inflate the balloon near the end of the catheter for a few seconds every few hours to see just the pressure in the lung and upper left heart chamber (atrium). This 'wedge pressure' reading guides which drugs and the dosage needed to help your left heart work best. This temporary pulmonary artery catheter is removed once the left heart filling pressures are no longer needed.

Fluid build-up showing rapid weight gain (and other warning symptoms) guide home heart failure treatment in most patients. Some patients also need lung-artery pressure readings at home. CardioMEMS™ by St. Jude is a permanent pressure sensor that can be placed by a catheter into a branch of the lung artery. The pressure sensor is released into the wall of the artery and the catheter is removed. The device comes with an electronic unit that the patient uses daily to send readings to their doctor. Since heart pressure changes often come **before** major heart failure symptoms, early drug changes may avoid an ER or hospital stay.



Surgery sometimes needed for heart failure

Your doctor will let you know if your heart failure can be improved with a cardiac electrical device. This could include:

- a biventricular pacemaker to correct an electrical delay

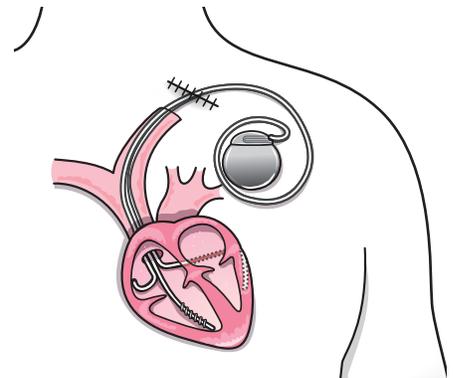
and/or

- an internal defibrillator (ICD) to help stop a life-threatening heart rhythm

Often heart failure patients need a device that works as both a pacemaker and a defibrillator.

Pacemaker (biventricular or CRT*)

Some heart failure patients have an electrical delay in their heart muscle contractions. This delay may mean the heart chambers do not beat when they should. If you have this delay, a biventricular pacemaker can correct it, so the chambers can beat in normal sequence. This may improve your heart failure symptoms and give you more energy.



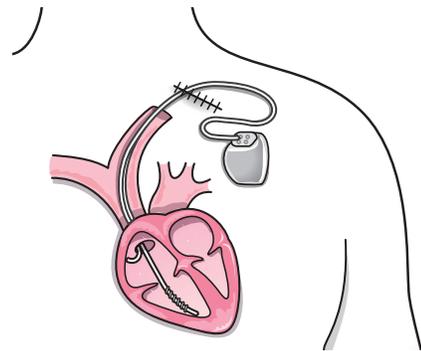
* Biventricular pacing is also known as cardiac resynchronization therapy (CRT).

Internal Cardioverter Defibrillator (ICD)

An ICD is used to stop life-threatening heart rhythms. The device can tell when these rhythms occur. Within seconds, it can give a shock and try to stop the rhythm.

Recent studies have shown that an ICD can help someone with heart failure who is at risk for a life-threatening heart rhythm. Most ICDs can also pace your heart to help keep a normal rhythm.

A few precautions are advised if you have a cardiac device. **Large electromagnetic fields must be avoided, especially if you have an ICD.** More information is available on the device maker's website and the Pritchett & Hull booklet, **You Have a Pacemaker and/or ICD.**



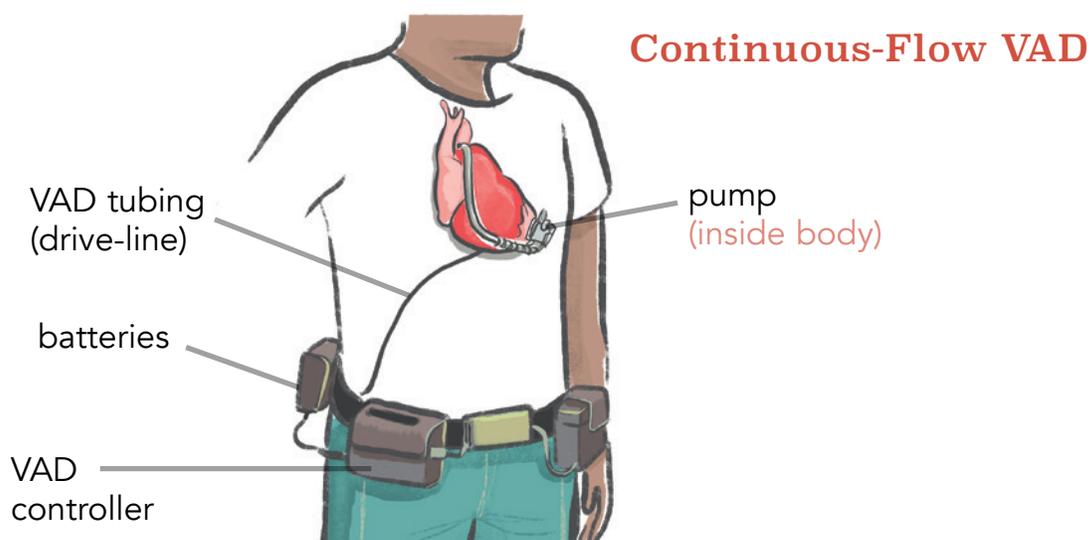
All cardiac devices require regular follow-up. Often wireless technology and/or phone lines allow you to send device readings from home to a secure internet server for your doctor or clinic to review. Your doctor is notified right away of important changes. Sometimes weight and blood pressure readings are also sent through the home monitoring system. Your healthcare provider can see changes in your readings and may be able to adjust your medication before you have major symptoms or need a hospital stay.

coronary artery bypass graft (CABG)

Sometimes heart bypass surgery can help blood flow to the heart when artery blockage threatens to cause heart damage. Although more blood flow doesn't help areas of old damage (scar), bypass surgery can help limit new damage.

VAD (ventricular assist device)

A ventricular assist device (VAD) refers to a small pump placed in the chest to boost blood flow from a lower heart chamber to a large body artery. A VAD may allow some patients with severe heart failure to get out of the hospital and live at home with family support. Many VAD patients often have more energy, fewer medications and an improved quality of life. A VAD can be implanted for long-term use (destination therapy) or as a bridge to transplant (BTT).



Newer VADs are smaller and allow continuous blood flow. Today's VADs include the HeartMate II[®], HeartWare[®] and the HeartMate 3[™] in clinical trials at some US hospitals. All of today's VAD pumps have a **drive-line tubing** that comes through the skin and connects outside the body to a small computer in the VAD "controller". Cables from the VAD controller lead to either **battery or AC power**. During the day the batteries and VAD controller are placed in a bag or the pockets of a VAD vest worn over clothing. At night, the patient (or family) disconnect the battery cables and plug them into the AC-powered VAD cable.

The VAD patient or family member do the regular sterile dressing changes needed to prevent infection where the drive-line tubing comes through the skin. Although showers are OK, **swimming and tub bathing are not allowed** with a VAD. Prior to a shower, place a company-specific product over the dressing like the ShowerGuard[®] by Centurion or plastic wrap like Glad Press'N'Seal[®]. The batteries and VAD controller go in a 'shower kit' provided by the device company. Many activities are fine for someone with a VAD as long as there is **no tension on the drive-line tubing**. **Contact sports are NOT ok.**

heart transplant

Heart transplants replace a failing heart that can no longer meet the body's needs. The stress of heart transplant surgery and the side effects of anti-rejection medicine put a serious strain on certain body functions. So the surgery is limited to those with severe heart failure who meet the criteria for transplant and otherwise have healthy body organs. Costly medicines and life-long medical follow-up are needed to prevent the body from rejecting the new heart. The need for heart transplants far exceeds the number of donor organs.

In some cases, a ventricular assist device (VAD) can be used as temporary support for someone who isn't doing well enough to wait for a heart donor. In this case, the VAD is used as a "bridge" to transplantation. Research continues to find ways to:

- help a damaged heart heal itself (gene therapy and/or stem cell injections),
- wrap or reshape heart chambers, and
- perfect a mechanical device that will fully support heart function.

Controlling the symptoms and stress of a serious illness can be difficult. If your doctor suggests **palliative care**, you can get extra help with:

- symptom management (anxiety; constipation, diarrhea or nausea; difficulty breathing, sleeping or eating)
- making difficult health decisions and finding community resources that can help you at home

A palliative care team often includes a doctor, nurse, social worker and/or chaplain. All can consult with your primary heart failure doctor as needed.



Causes of heart failure

If the cause of heart failure is known, treatment can often be given for this heart problem. This offers the best long-term results. Heart failure can be temporary if the cause can be reversed. Having diabetes with or without heart disease or high blood pressure increases the risk of heart failure, especially in women.

If your healthcare provider has discussed any of these as a possible cause for your heart failure, you may want to read that page.

Cause

- coronary heart disease44
- high blood pressure45
- cardiomyopathy46
- abnormal heart valves47
- severe lung disease47
- severe anemia48
- overactive thyroid48
- abnormal heart rhythm48
- over-use of alcohol48



Note: Heart failure can also occur in adults who were born with a heart defect including some of those who had a surgical repair. See page 49 and inside back cover.

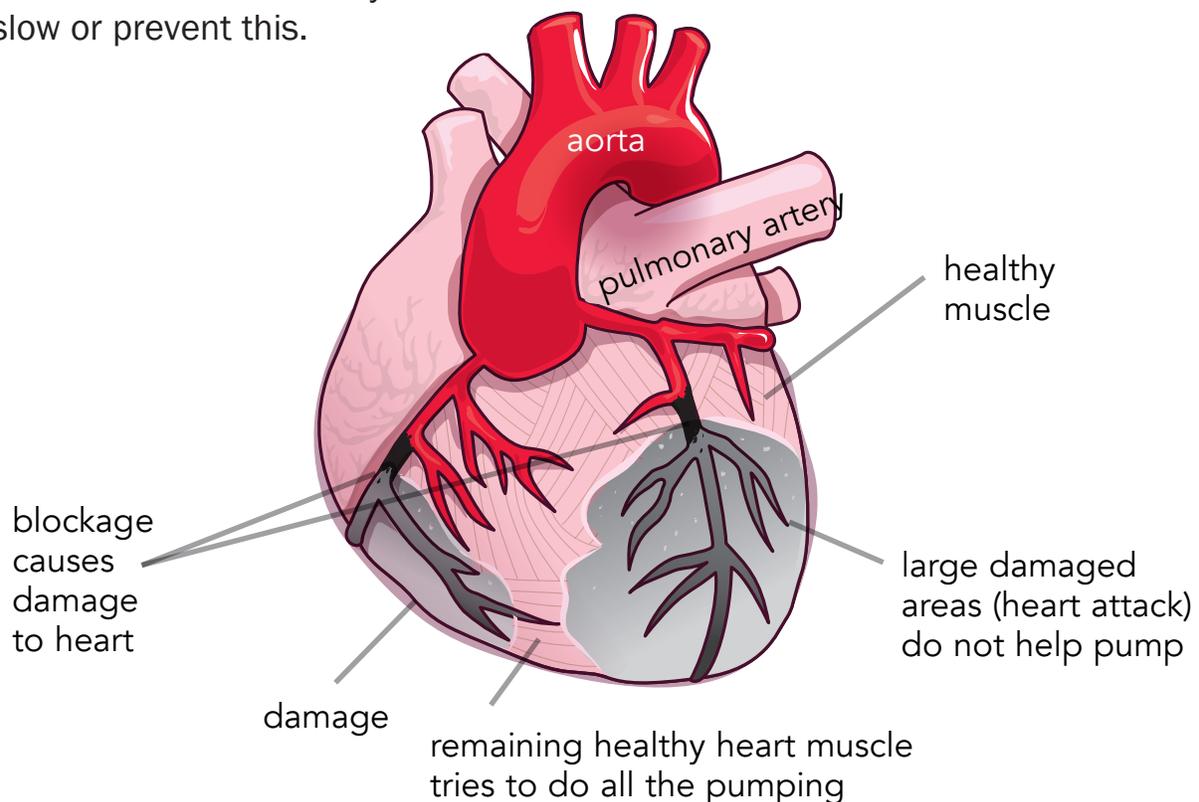
Ways to prevent CHD:

- Do not smoke
- Control blood cholesterol levels
- Control blood pressure
- Keep a healthy weight
- Exercise regularly
- Control blood sugar (for diabetes)
- Reduce stress levels

coronary heart disease

Coronary heart disease (CHD) is a buildup of cholesterol and fatty deposits in the arteries that supply the heart muscle with blood and oxygen. As these arteries become clogged, less blood reaches the heart muscle.

Heart attacks damage the heart muscle. When large areas of the heart are damaged, the remaining 'good' heart muscle has to work harder pumping out the blood. Over time the heart chambers stretch (dilate) and the heart muscle gets larger (hypertrophy). This is called cardiac remodeling and can lead to heart failure. Studies continue to find ways to slow or prevent this.



* also known as coronary artery disease or ischemic heart disease.



high blood pressure

The left lower heart (ventricle) pumps blood through the arteries carrying blood to all parts of the body. If pressure in the arteries is normal, they stretch easily and there is no extra strain on the left heart. If pressure in the arteries is high, the left heart has to pump harder to force out the blood. If blood pressure stays high for a long time, the heart muscle can weaken and heart failure can occur.

Do what your doctor or nurse says to keep your resting blood pressure less than 130 (top number) and less than 80 (bottom number).^{*} This may include weight loss and following a diet low in saturated fat, cholesterol, and sodium and high in potassium rich foods (DASH^{**} diet). Often exercise is advised. Alcohol may be limited or not allowed. Good blood pressure control limits the episodes of heart failure. Check your BP regularly at home and at your doctor's office. Over 100 million Americans (46%) have hypertension according to the 2017 Hypertension Guidelines.^{*}

^{*} 2017 American College of Cardiology Expert Consensus Decision Pathway for Optimization of Heart Failure Treatment: Answers to 10 Pivotal Issues About Heart Failure With Reduced Ejection Fraction.”

^{**} DASH (Dietary Approaches to Stop Hypertension)

cardiomyopathy

Cardiomyopathy is a general term for a disease of the heart muscle. You may be told that your problem is **idiopathic** (the cause is not known), or your doctor may say you have: **dilated, restrictive or hypertrophic cardiomyopathy**.

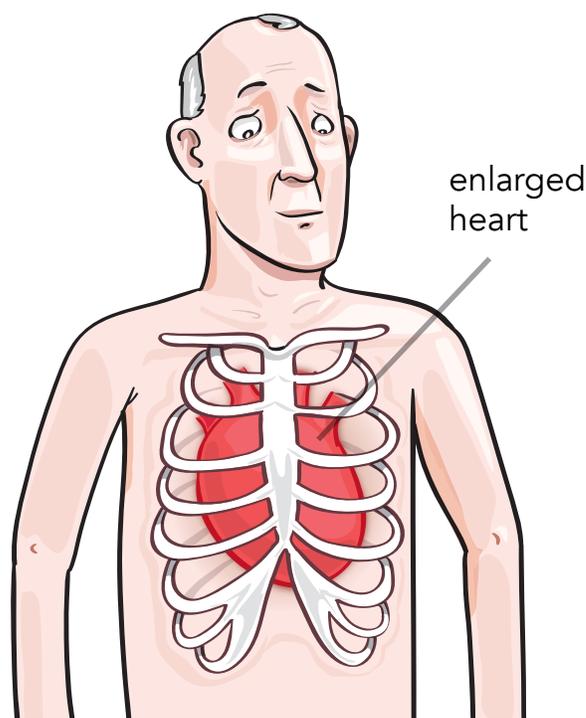
Dilated cardiomyopathy is the most common, and refers to the heart stretching or becoming larger. Viruses, the effects of alcohol or other toxic agents* or sometimes pregnancy can cause this.

Studies show that some types of dilated cardiomyopathy run in families. If the heart becomes strained, it will most often appear enlarged on a chest x-ray.

Some things can also get into the heart muscle (example: iron, amyloid [body protein] or a tumor). A stretched heart does not pump as well as it should. It is like a rubber band that has lost its snap.

Restrictive and hypertrophic cardiomyopathy often begin by making it harder for the heart to fill. A chest x-ray may not show the problem. Other tests may be needed to find out what is going on and how best to treat it.

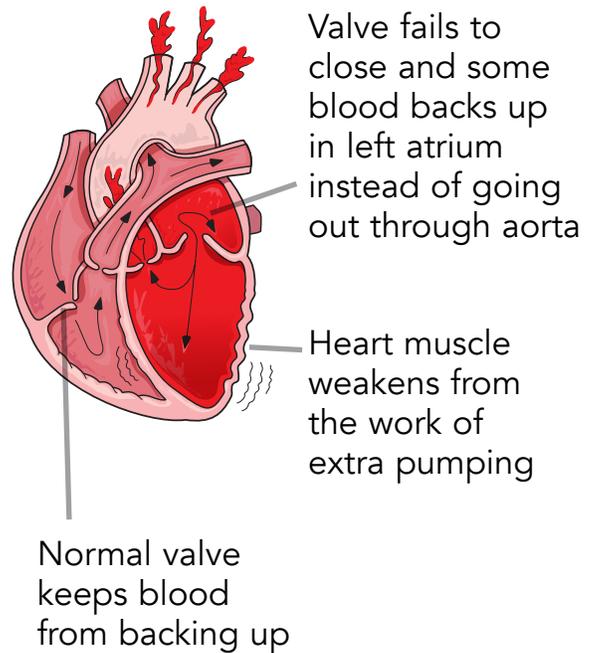
*Toxic agents include illicit drugs like cocaine, methamphetamine, as well as anthracycline (Adriamycin®) or cyclophosphamide (Cytosan) (types of chemo), ephedra (for weight loss), and Herceptin® (antibody for breast cancer).



abnormal heart valves

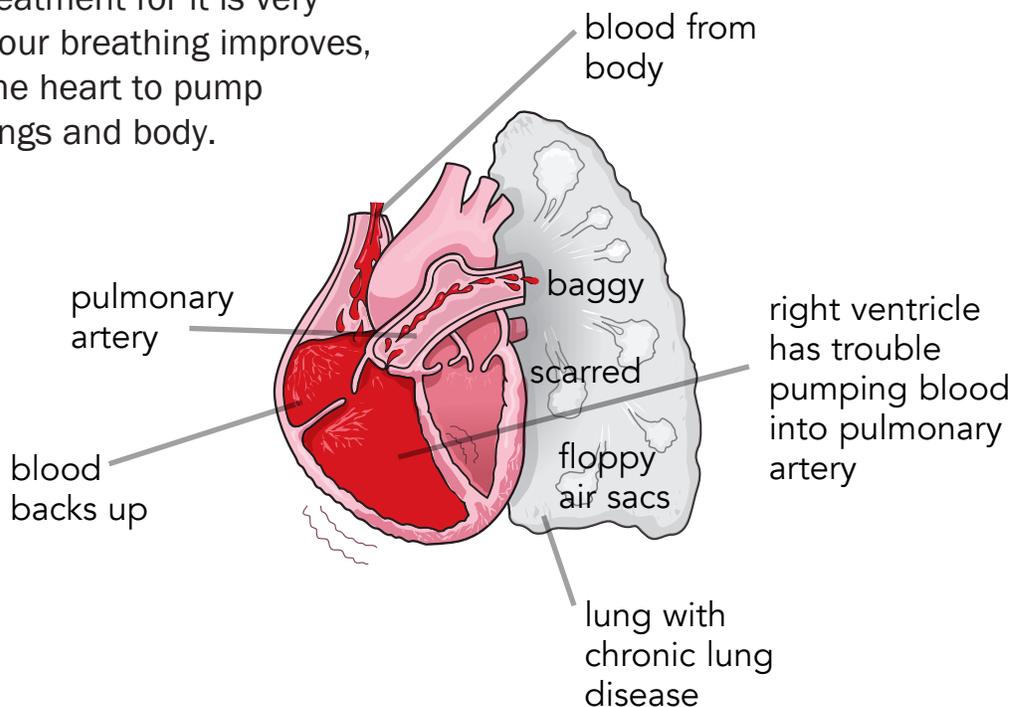
Abnormal heart valves are those that do not fully open or close during each heartbeat. The problem can be present at birth or due to other causes like an infection with rheumatic fever.

Normal heart valves act like doors. They open and close at the right time to move the blood forward and keep it from going backward. If a valve doesn't open or close like it should, the heart muscle has to pump harder. If the work load becomes too great, heart failure results. Sometimes surgery is needed to replace or repair a heart valve. Other times, a catheter procedure is done to help open a tight valve (TAVI® or TAVR®).



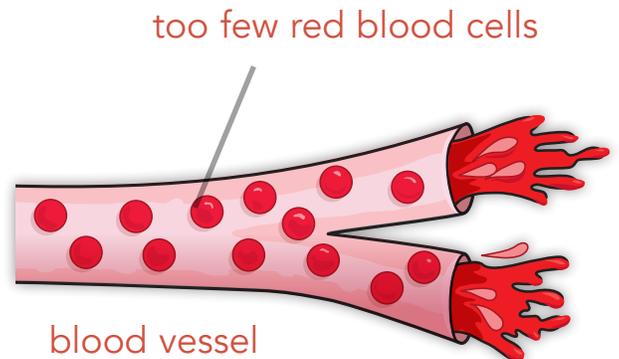
severe lung disease

Severe lung disease adds to the work of the heart. If you have a chronic lung disease, treatment for it is very important. As your breathing improves, it is easier for the heart to pump blood to your lungs and body.

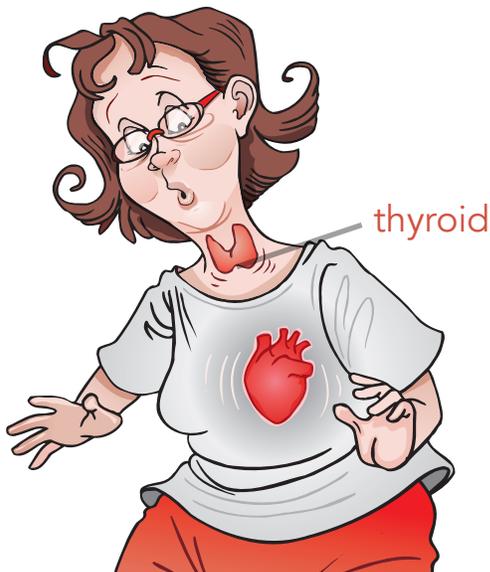


severe anemia

Severe anemia means not having enough red blood cells to carry oxygen. The heart tries to move the small number of red blood cells at a faster rate. It can become very tired from this effort. Taking iron tablets (or IV iron medication for some) helps the body build more red blood cells. This may allow the heart to slow down and improve its pumping.



Anemia



overactive thyroid

An **overactive thyroid** gland causes the body to work at a fast pace. Over time, the heart can have trouble keeping up. Once the thyroid hormone is down to normal levels, the heart is likely to pump at a normal speed.

abnormal heart rhythm

An **abnormal heart rhythm** (arrhythmia) refers to the heart beating either too fast or too slow. In either case, the heart may not be able to pump enough blood for all of the body. Sometimes strain or heart failure may occur.

over-use of alcohol

Over-use of alcohol can weaken the heart's pumping action. If you stop drinking alcohol early enough, the heart may return to its normal strength. Doctors often suggest heart failure patients reduce or stop alcohol intake altogether.

Congenital heart disease



Congenital heart disease refers to defects that you are born with. Often they increase the work of your heart. One or more surgeries to repair the defect(s) can help. Seeing a special heart doctor can help in treating symptoms that can evolve over time (high blood pressure, coronary artery or lung disease.)”

Transposition of the great arteries (TGA)

TGA occurs when the pulmonary artery comes out of the lower left chamber and the aorta comes out of the lower right chamber.

When the aorta and pulmonary artery are reversed, the body doesn't get the oxygen-rich blood that it should. **The right heart** recycles the same blood through the arteries and veins without a way to get more oxygen.

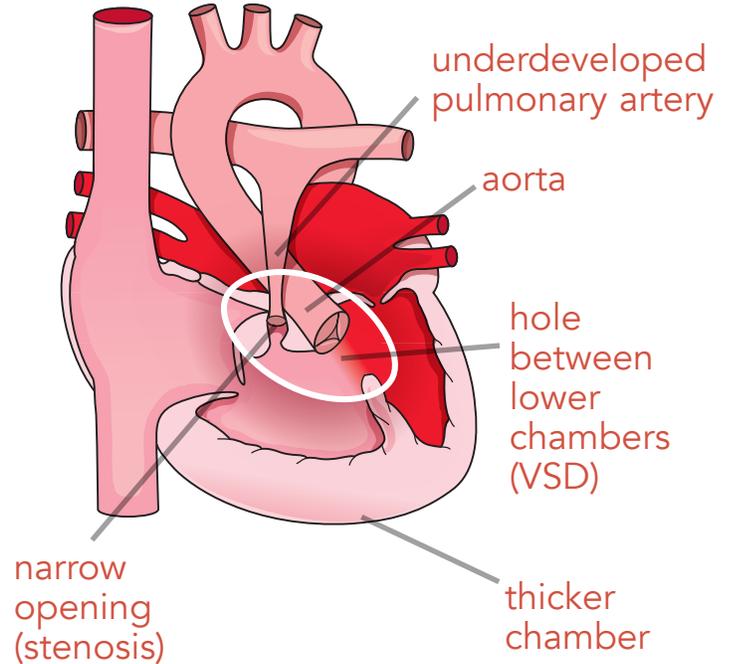
The left side of the heart recycles the same oxygen-rich blood through the lungs. For any of the oxygen-rich blood to get into the aorta and out to the body, there has to be one or more holes between the heart chambers and/or a connecting blood vessel.

For years, TGA was corrected by switching the top 2 heart chambers (atria) with a Mustard or Senning operation. Adults who had either operation as a child can develop heart failure if the thinner right ventricle gets tired of pumping blood against the high pressures in the aorta.

Tetralogy of Fallot (TOF)

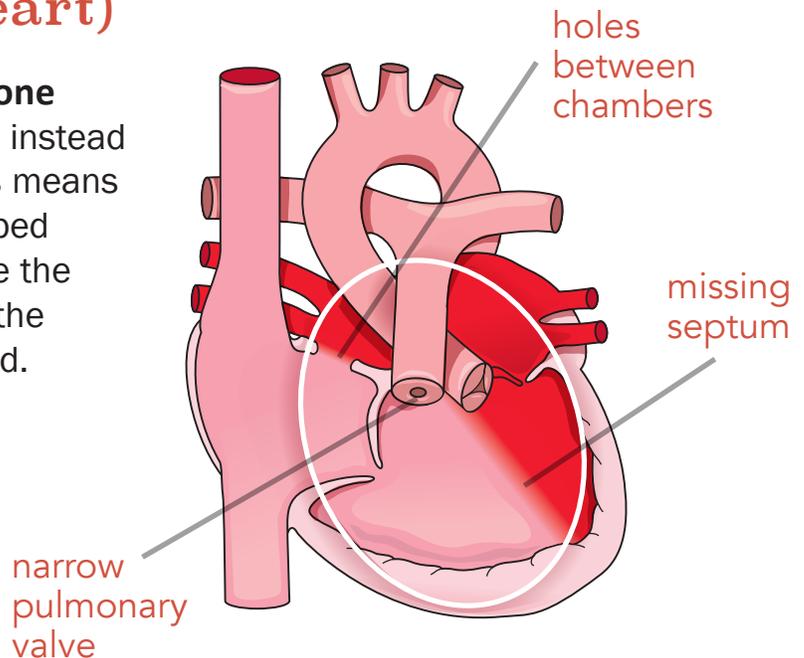
TOF refers to 4 heart defects. The aorta opens to both of the lower heart chambers above a large hole called a ventricular septal defect or VSD.

In addition, there is narrowing under or at the pulmonary valve (pulmonary stenosis) and thickening (enlargement) of the right lower chamber.



Single ventricle (univentricular heart)

Single ventricle means there is **one ventricle** (lower heart chamber) instead of two separate chambers. This means a large amount of blood is pumped into the lungs. This can damage the blood vessels in the lungs, and the heart valves can also be affected.



As national leaders in heart failure and transplantation, Penn Medicine's heart failure cardiologists and surgeons offer preventive, medical and surgical options at every stage of the disease. Our goal is to improve both the quality and longevity of life so you can live it to the fullest.

For more information, visit PennMedicine.org/heart.

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