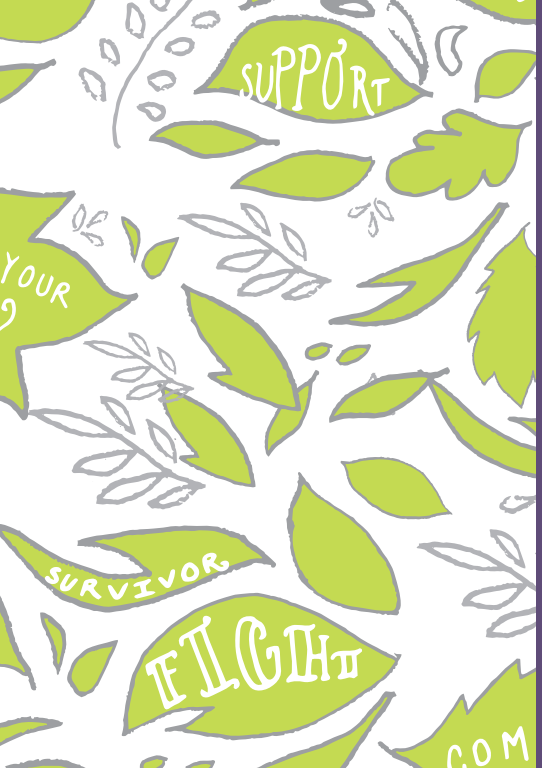

Survivorship:

Heart Health for Cancer Survivors

THE UNIVERSITY OF TEXAS
MD Anderson Cancer Center
Making Cancer History®

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Heart Health for Cancer Survivors

Congratulations!

You are one of the more than 18 million patients that are identified as cancer survivors. We can help you achieve an active and healthy lifestyle after cancer. Good heart health is an important part of your overall health.

Your health care team needs to understand certain things about your heart and how it functions. You are an important member of the health care team. Having cancer alone does not put you at a higher risk for heart disease. However, cancer treatments such as chemotherapy and radiation can increase the risk for the developing heart disease.

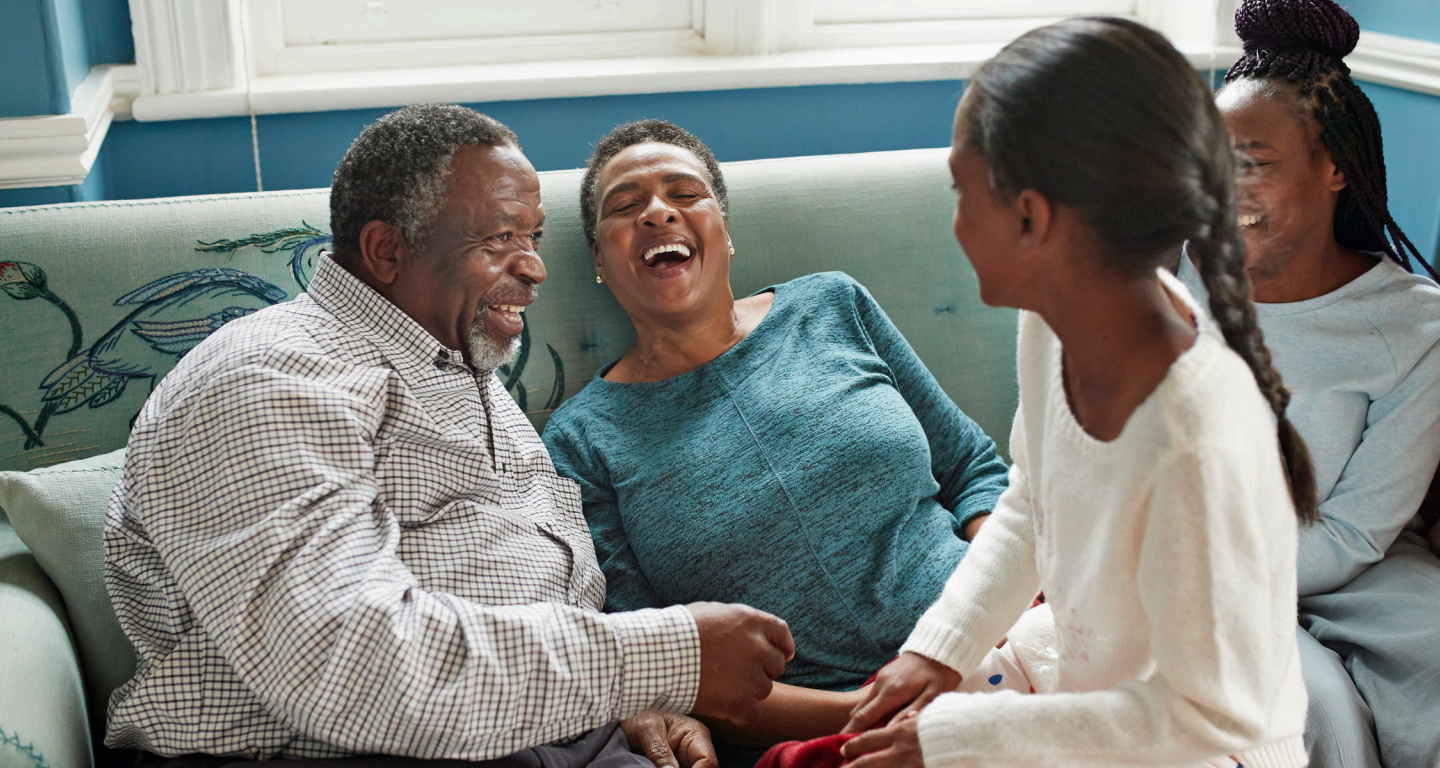
You will be provided a treatment plan to help you stay healthy and strong after cancer treatment. A thorough heart exam will include evaluation, diagnosis and treatment.

Evaluating your risk is the beginning of your heart health process. We want to provide you with the tools to catch any problems before they happen. This booklet will provide you with information to maintain good heart health.

Heart Disease

Heart disease can be many things. For most people, it means you have a condition where your heart is not functioning properly. Heart disease is a concern for everyone and can be prevented if treated early. Your heart is changing all the time and can have problems like other areas of your body.

The heart and vascular system play a vital role in maintaining a healthy lifestyle. Diseases of the heart or cardiovascular system can limit your lifestyle and lifespan.



Risk Factors for Heart Disease

Your risk factors for developing heart disease are due to your lifestyle or it is inherited. This means you may be at a higher risk for developing heart disease based on your health choices or your genes. These factors affect your heart health. They can impact the development of future heart disease.

Risk Factors from Cancer Treatment

Some cancer treatments can cause damage to the heart muscle (cardiotoxicity). Chemotherapy, radiation therapy and newer forms of cancer treatment (targeted therapies and immunotherapies) can cause cardiotoxicity.

CHEMOTHERAPY

Anthracyclines are a group of medicines used in chemotherapy treatments. They have a high risk of cardiotoxicity.

You may know it by its distinctive red color. They are highly effective on breast cancer and lymphoma. However, these medicines can cause damage to the heart. Damage happens slowly over time. Not all patients taking these medicines will develop heart damage. It is hard to know who will be affected. Some patients will not have damage until 10 to 20 years after their cancer treatment. The more chemotherapy you receive, the greater your chance for developing heart damage.

Patients should keep track of the anthracycline dosage they received. You can find this information in your medical records. In general, an adult should take no more than 400 mg/m2, and a child, no more than 250 mg/m2 of anthracyclines..

There are many types of anthracyclines. Some of the more commonly used are doxorubicin, epirubicin, daunorubicin, idarubicin and mitoxantrone.

Ask your doctor if you were treated with anthracycline-based chemotherapy.

RADIATION THERAPY

Some radiation therapy can cause damage to the heart. This can put you at an increased risk for heart disease. The risk of developing heart disease depends on the amount of radiation you have received. This means radiation from many different sources including tests and treatment. You may need to have a doctor check for heart disease more often if you've had received radiation therapy.

It is also important to know what parts of your body were radiated. You may need more screening if the heart and areas around the heart were exposed to radiation. This includes the carotid artery located in

your neck, the coronary arteries around the heart, and the valves of the heart. Radiation treatments directed to the **left chest wall** (internal nodes in the chest) may have possible risks for cardiac late effects.

Radiation may cause plaque to form in the blood vessels more quickly. People who received radiation before 1980 are at higher risk for heart disease. The radiation used during this time was more harmful than the radiation used today. However, there are still risks for anyone who received radiation, even after 1980. Your specific risk should be discussed with your doctor and survivorship care team.

Another type of radiation therapy called targeted therapy is available. This form of radiation reduces the amount of radiation to your body. It has helped to reduce the risks of heart disease. However, the risk is still there. It is important to be aware of the total dose of radiation and the site(s) where the radiation was received. Make sure to tell your care team about your past radiation treatment.

Write down your dosage and location of your radiation therapy.

Use the log at the back of this booklet.

IMMUNOTHERAPY

Immunotherapy is another type of cancer treatment. It uses the body's own natural defenses to fight cancer. Some patients may have side effects from immunotherapy, including myocarditis. The most severe form of myocarditis can cause heart failure and dangerous heart rhythms. Talk with your care team if you've received immunotherapy in the past.

TARGETED THERAPY

Targeted therapy is a type of cancer treatment that uses specified medicines to attack cancer cells. Some patients may have side effects from targeted therapy. They include cardiomyopathy, myocarditis and dangerous irregular heart rhythms.

Risk Factors of the General Population

Age is a major risk factor for heart disease because blood vessels age the same way as the body. The walls of the blood vessels become thicker, harder and lose their elasticity.

Family history is a risk factor because you are more likely to develop heart disease if your parents or siblings have heart disease. It is passed down from one generation to the next.

Physical inactivity has a negative effect on the cardiovascular system. The heart is a muscle and should be treated as you would treat any other muscle in the body. Regular exercise and physical activity will strengthen your heart and make it stronger.

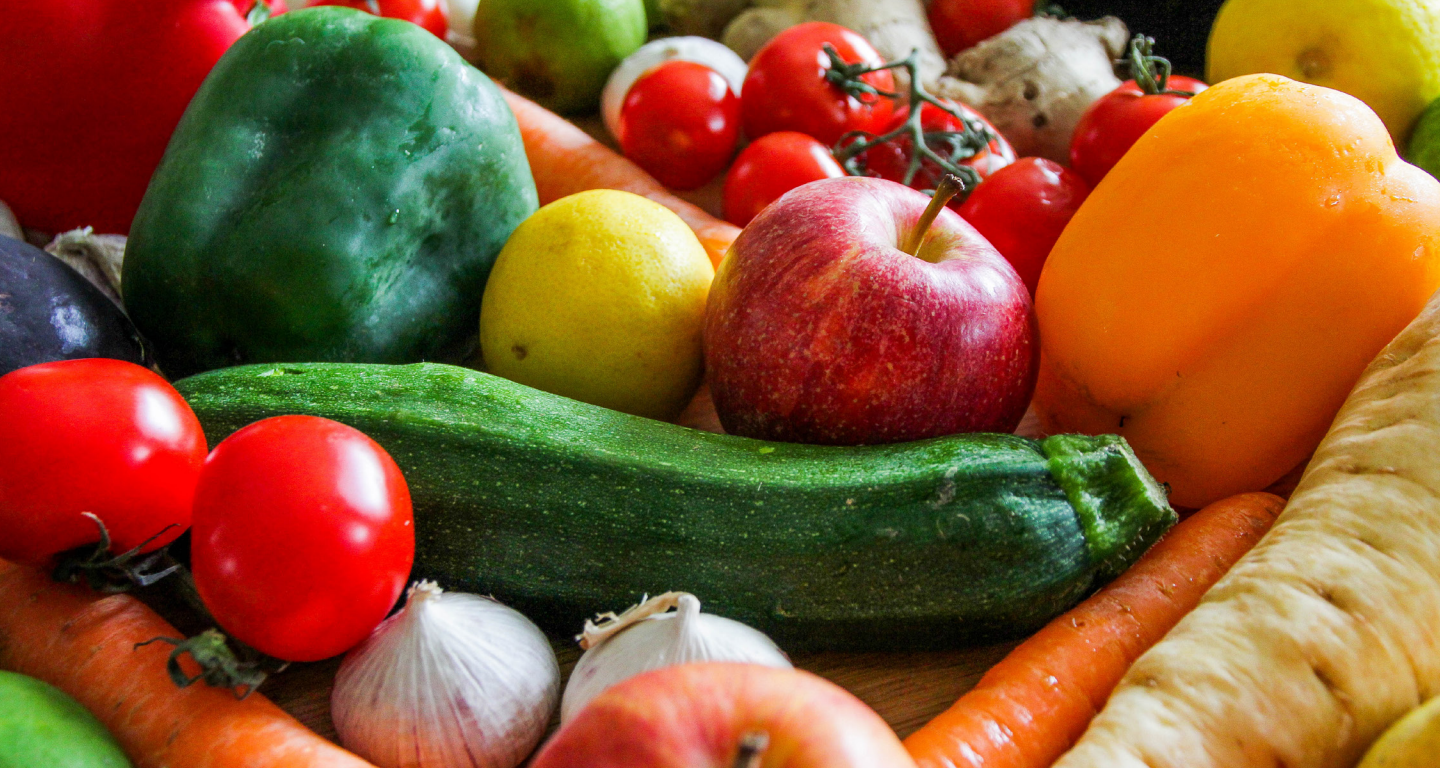
Sex is **not** a risk factor. Men and women have equal risk for developing heart disease.

The heart within the chest cavity.

Other lifestyle factors that increase your risk for heart disease:

- Excessive alcohol consumption
- Obesity
- Smoking
- Uncontrolled stress

Along with lifestyle factors, certain diseases, such as high blood pressure, diabetes and metabolic syndrome, can place a person at a higher risk for developing heart disease. If you have any of these conditions, you need to be closely monitored by a doctor.



Reducing Risks of Heart Disease

Adopt a healthy lifestyle and talk with your doctor about screening for heart disease. As a cancer survivor, awareness is the best form of prevention.

There are many things you can do to lower your risks of developing heart disease. A healthy lifestyle is important in both heart health and prevention of cancer. Diet and exercise are important factors to decrease your risk. Stress management is also an important in reducing your risk of heart disease.

DIET

A major focus of a heart health diet is cholesterol control. Cholesterol is a fatty, waxy substance found in animal products. Cholesterol doesn't just come from food sources. Your liver also produces it. The liver combined with the food you eat typically makes about 1,000 mg of cholesterol each day. This leads to a high level of cholesterol in the body.

The high level of cholesterol can lead to a problem called hyperlipidemia. This means you have too much cholesterol. The recommendation is to eat less than 300 mg of cholesterol each day. Choosing foods low in cholesterol can improve your health. Your body can make cholesterol if you need it.

There are 2 kinds of cholesterol. They are:

- High density lipoprotein (HDL)
- Low density lipoprotein (LDL)

An easy way to remember this is LDL is bad cholesterol and HDL is good cholesterol. High-fat diets raise the LDL. Exercise increases HDL. For patients with hyperlipidemia, the goal is to lower LDL and increase HDL.

The best way to control cholesterol is through diet and exercise. Your doctor may prescribe medicines if diet and exercise alone are not enough. However, this is not a substitute for a healthy diet and exercise.

LIMIT FOODS HIGH IN FAT

Try to limit your fat intake to 50 to 75 grams each day. There are 3 major types of fat in foods.

- **Saturated fats** – also known as animal fats (examples: red meat, poultry skin, full-fat dairy products, eggs, bacon and butter) and should only be about 7% of your diet.

- **Polyunsaturated/monounsaturated fats** – have a more positive effect on your heart. Most of your fat intake should come from these fats. Examples include nuts, seeds, avocados and fish high in omega-3 (salmon and cod).

- **Trans fats** – are the worst fats. They can raise your bad cholesterol and lower your good cholesterol. Avoid or limit these fats. You can find trans fats in processed foods like doughnuts, margarine, cookies and fast foods. Less than 1% of your fat intake should come from these fats.

DECREASE SODIUM

The cardiovascular system is affected by the amount of salt you eat. Salt can cause the body to hold on to water. This makes your heart and blood vessels work harder than normal. In some people, this extra work can affect their blood pressure. Having a normal blood pressure is important in maintaining a healthy heart. Low salt diets can help to control blood pressure. Normal salt intake for a person who does not have heart disease should be less than 2400 mg per day. If you have heart disease, talk with your doctor or dietitian about what changes you should make to your diet.

INCREASE FIBER

Fruits, vegetables, whole grains and beans are all great ways to add more fiber to your diet. Fiber helps remove the bad cholesterol out of your body. A good goal is to aim for 4½ cups of fruits and vegetables and at least 3 servings of whole grains every day.

EXERCISE

Exercise is one of the best tools for maintaining good heart health. You should strive to get some type of physical activity at least 5 times each week. The key to getting more exercise in your routine is to start slow. This may mean you only walk for 5 to 10 minutes each day. Slowly build up your time each week to where you feel comfortable exercising for 30 minutes at time. It is recommended that you get at least 150 minutes of moderate activity per week. These recommendations are based on the Physical Activity Guidelines for Americans, 2nd edition, published by the U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion and align with the American Institute for Cancer Research's guidelines for cancer risk reduction.

Moderate physical activity can be:

- Walking
- Swimming
- Dancing
- Cycling
- Tennis
- Light jogging (to where your heart is beating quickly)

If you are unable to exercise, talk with your doctor about other types of physical activity that you can do.

Moderate and vigorous describe how hard it is for you to do the activity. During moderate activity you should be a little out of breath and feel your heart beating a little faster. During vigorous activity you should be breathing more rapidly and only able to speak a few words at a time.

Based on your ability and goals, try to get either:

- 150 minutes of moderate activity each week
- 75 minutes of vigorous physical activity
- A combination of both vigorous and moderate activity

Start slowly with shorter sessions (10 to 15 minutes) at a relaxed pace to avoid injury. Then over time, increase the frequency, length and intensity of your activity. You can reach the total minutes through different types of exercise. For example, you could walk briskly for 30 minutes, 5 days a week to equal 150 minutes of moderate activity. You could also swim laps or play basketball for 25 minutes, 3 days a week to equal 75 minutes of vigorous activity.

The table below gives examples of moderate and vigorous activity.

Moderate Activity	Vigorous Activity
Brisk walking (17-minute mile)	Fast walking (12-minute mile)
Dancing	Running
Slow swimming	Swimming laps
Golfing	Basketball
Gardening	Fast bicycling

MAINTAINING A HEALTHY WEIGHT

Maintaining a healthy weight will reduce your risk for many types of cancer, including breast, colon, uterine and liver cancers.

Only 25% of adults in the United States are at healthy body weight. And the link between body weight and cancer is clear. Research shows that if you fall into the overweight or obese categories, you are at higher risk for developing more than 10 types of cancers.

Researchers are not exactly sure why high body weight increases the risk of cancer. However, doctors believe excess weight causes hormonal changes and inflammation that make cells multiply more rapidly than normal. The more cells multiply, the more likely it is that there will be a mistake that results in uncontrolled growth and cancer. Three factors that cause cells to multiply more quickly are:

- **Inflammation:** Excess weight causes a buildup of visceral fat, which is the fat that surrounds your organs. The low oxygen environment in visceral fat triggers inflammation, which causes cells to multiply.
- **Insulin resistance:** Inflammation can also stop your body from responding to insulin, the hormone that regulates blood sugar. If you become insulin resistant, your body will produce more insulin and that can cause cells to multiply more quickly.
- **Increased estrogen:** Fat cells in all people make estrogen, and estrogen also causes cells to multiply more quickly.

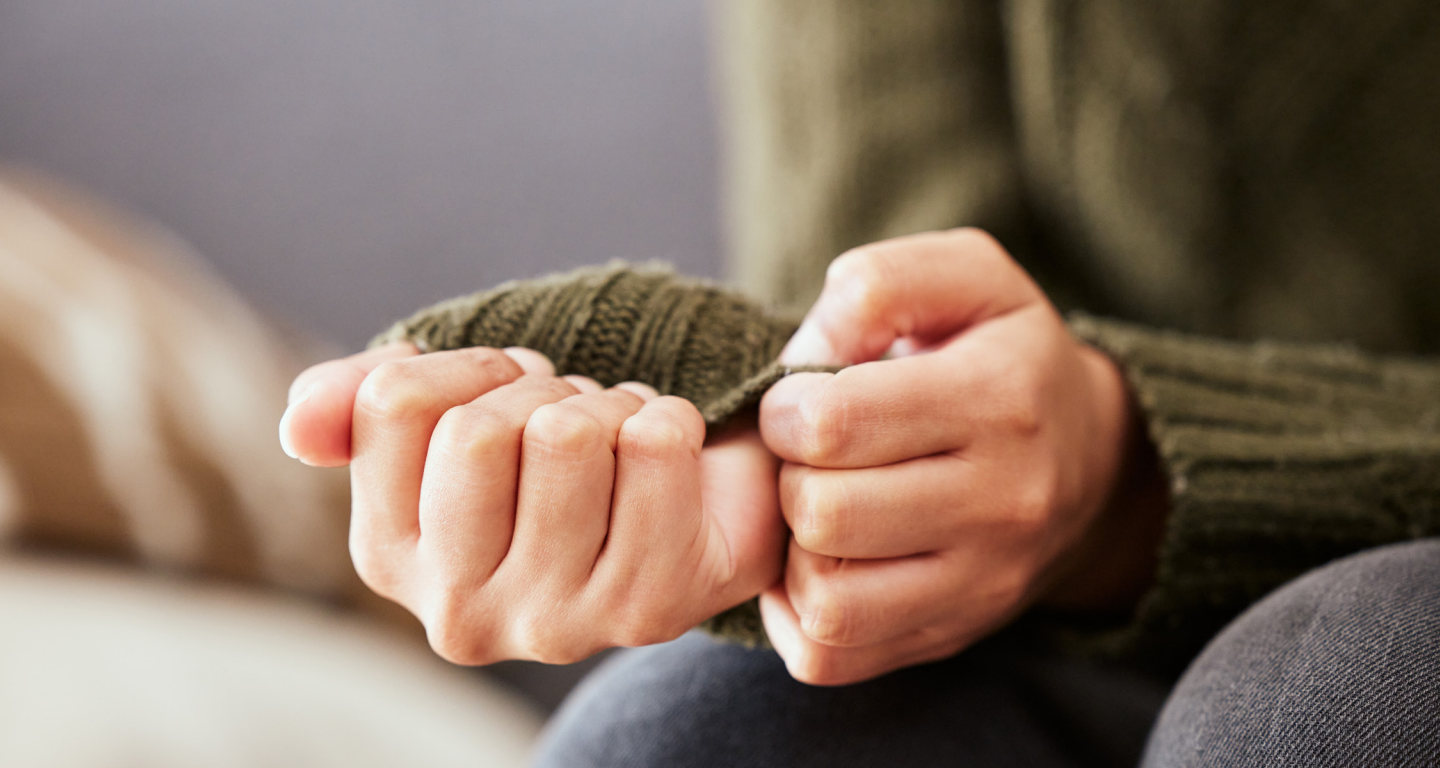
QUIT SMOKING

Quitting smoking is probably the most important factor in preventing heart disease. Smoking causes damage to the function of your heart and blood vessels. This increases the risk of plaque buildup. Talk with your doctor if you need help to quit smoking. You can also request an appointment to the MD Anderson Tobacco Treatment Program, located in the Cancer Prevention Center.

CARDIOVASCULAR MEDICINES

Medicine may be used to treat a variety of heart diseases. The same medicine used for high blood pressure may also be used for congestive heart failure.

To get benefit from your medicines, it is important to take them exactly as prescribed by your doctor. In fact, your chance of a better health outcome improves when you take your medicines as directed. If you have any questions about your medicine, talk with your doctor who prescribed the medicine.



Coping with Cancer and Heart Disease

Many survivors say they have undergone a change when cancer therapy is over. It may be hard for you to completely return to the person that you were before your cancer diagnosis. Many survivors have had their lives placed on hold while they received treatment. You look forward to resuming the normal flow of the life you knew before cancer. You may still face emotional and physical issues after treatment.

Depending on the cancer and treatment that you have received, physical limits may impact how you are able to return to functioning. You may find that long-standing remission may reduce the amount of anxiety that you feel. Studies suggest that rates of anxiety are still persistent after treatment. If your heart was affected, you may find more stress or anxiety. This may be due to the uncertainty you have of having not 1 but 2 chronic diseases.

ANXIETY AND DEPRESSION

Anxiety and depression are common after treatment for cancer. There can be some factors that play a role in who is more likely to feel anxious or depressed. These are age, sex, age at diagnosis and time of treatment. Other studies suggest that anxiety and depression are associated with increased risk of heart disease. If you think you are still experiencing anxiety or depression, talk with your doctor for help.

FATIGUE

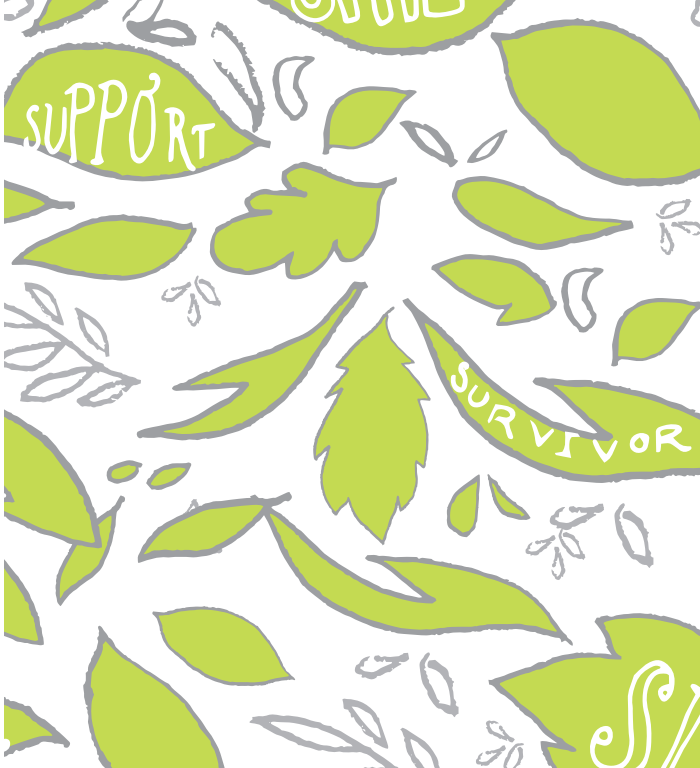
Fatigue is a very common symptom among cancer survivors. Patients comment that fatigue "profoundly alters their way of life." Sometimes fatigue can be a side effect of chemotherapy. Other times it could be a result of heart or other health issues. It is important to consider both when trying to determine the cause.

Some lifestyle changes can reduce fatigue. Quitting smoking and increasing physical activity may help lower fatigue. If you are experiencing fatigue, talk with your doctor as there may be some things you can do to reduce fatigue.

ISSUES WITH SEX

Sexual problems are common among cancer survivors. If you are having issues with sex, it may be caused by heart issues. This may be more common in males. You can be evaluated by a doctor as there may be medicines to help.

Cancer survivors will continue to see a primary care doctor. This doctor can perform a complete physical exam which includes emotional assessment and a thorough exam of the heart. If there are any issues, you may be referred to a specialist. Remember that your emotional well-being can play a significant role on your physical well-being.



Moving Forward

As a patient, you play an important role in your health care. The doctors you see will not have as much information about your health and your body as you. You are the one living in it.

As a cancer survivor, you have undergone therapies that can potentially alter your heart and the overall cardiovascular system. There are some important things that you should be aware of concerning your cardiovascular health.

Your survivorship care team will discuss your risk of heart disease with you. In some cases, they may refer you to a cardiologist. There are tests that can be done to check if you have heart disease.

Know these things when talking with your doctor:

- Your blood pressure
- Your medicines
- Your cholesterol
- Your blood sugar and hemoglobin A1C (HbA1C), if you have elevated blood sugar level
- Type and amount of chemotherapy received (anthracycline-based chemotherapy regimen)
- Amount of radiation received, and what sites on your body you received the radiation

With these facts, you will be the best advocate of your cardiovascular health. Remember to eat well, stop smoking and exercise. These are very important efforts to lower your risk of heart disease, and you have control over them.

Your Medical Information

Write down your health information to keep track of your heart health.

Blood Pressure: _____ Weight: _____

Chemotherapy Drugs: _____

Anthracyclines _____

Radiation Therapy: _____

Location _____

Total dose _____

Last date given _____

Goals for the Future

Healthy blood pressure for me: _____

Healthy weight for me: _____

Lifestyle factors to reduce my risk of heart disease. I will:

- ☐ Quit smoking
- ☐ Exercise more frequently
- ☐ Control stress
- ☐ Increase fruits and vegetables
- ☐ Decrease amount of sodium
- ☐ Continue routine health screenings
- ☐ Other

Screening for Heart Disease

An important aspect of lowering your risk of heart disease is managing health behaviors and risk factors. These include diet, physical activity, smoking, body mass index (BMI), blood pressure, total cholesterol, and blood glucose. But how do you know which risk factors you have? Your doctor will do a heart screening that may include some of these tests.

Blood Pressure

Blood pressure screenings are very important because high blood pressure usually has no symptoms so it cannot be detected without being measured. High blood pressure increases your risk of heart disease and stroke. Talk with your doctor about screening for high blood pressure. If you have high blood pressure, your doctor may want to check it more often. High blood pressure can be controlled through lifestyle changes and medicines.

Fasting Lipid Profile (Cholesterol)

Fasting lipoprotein profile is a blood test that measures total cholesterol, LDL (bad) cholesterol and HDL (good) cholesterol. You may need to be tested more often if you are at an increased risk for heart disease or stroke. High cholesterol can also be managed through lifestyle changes and medicines.

Blood Glucose

High blood sugar (glucose) levels increase your risk of developing insulin resistance, prediabetes, and type 2 diabetes. Untreated diabetes can lead to many serious medical problems including heart disease and stroke. If you are overweight and have at least one additional cardiovascular risk factor, you may need a blood glucose test. The blood test measures glycated hemoglobin (A1c) levels. An A1c level of 6.5% or higher indicates you may have diabetes.

Electrocardiogram (ECG or EKG)

An electrocardiogram traces the electrical activity of the heart. Electrodes are placed on the chest and limbs. This test is useful in diagnosing blockages in the heart, inflammation of the heart and arrhythmias.

Echocardiogram

An echocardiogram is an ultrasound of the heart that is used to diagnose many forms of heart disease. The amount of blood the heart can empty is called the ejection fraction. The normal ejection fraction is 55 to 60%. This means that the heart empties 55 to 60% of its blood with each contraction. A decreased ejection fraction is an indicator that you have systolic dysfunction. Valves can be visualized with the echocardiogram which will help diagnose valvular disease.

Stress Test

A stress test evaluates areas in the heart that may not be getting good blood supply. You may have an exercise stress test or chemical stress test if you cannot tolerate exercising. Some stress test may use nuclear isotope and others evaluate the function of your heart with echocardiogram.

RESOURCES

MD Anderson Office of Cancer Survivorship
www.MDAnderson.org/survivorship

Department of Cardiology
www.MDAnderson.org/research/departments-labs-institutes/departments-divisions/cardiology.html

American Heart Association
www.Heart.org

American Cancer Society
www.Cancer.org

The U.S. Department of Health and Human Services National Institutes of Health National Heart, Lung, and Blood Institute
Your Guide to Lowering Your Blood Pressure with DASH
www.NHLBI.NIH.gov/health/public/heart/hbp/dash/new_dash.pdf