

ESC Clinical Practice Guidelines on  
**Cardio-Oncology:**  
**What Patients**  
**Need to Know**



# What Are Clinical Practice Guidelines?

Clinical Practice Guidelines are written by a multidisciplinary team of healthcare professionals, including doctors, nurses, scientists and patients, and are intended mainly for use in clinics and hospitals. Guidelines are useful in making diagnoses and deciding on treatment using the most up-to-date medical and scientific evidence to ensure that patients receive the most appropriate care.

This document is for patients with cancer, their families and caregivers, and is based on the European Society of Cardiology (ESC) Clinical Practice Guidelines on cardio-oncology.

## What Will This Document Tell Me?

Some cancer treatments may harm the heart and circulation. This document provides an overview of the latest recommendations on how these side effects can be prevented, diagnosed and treated. It should help you to understand the importance of:

- Being treated by a multidisciplinary cardio-oncology team, which means having a team of doctors, nurses and other healthcare professionals involved in your care
- Looking after your heart health, during and after cancer treatment
- Paying particular attention to your heart health if you have previously had a heart attack, a stroke, an arrhythmia (irregular heartbeat) or you have high blood pressure, diabetes or high cholesterol
- Making appropriate healthy lifestyle choices

If you want to know more about any of the topics in this document, there are links to the appropriate sections in the [ESC Clinical Practice Guidelines on cardio-oncology](#).

## How Will This Document Help Me?

This document is intended to answer some questions that you may have and support you in conversations with your medical team. For example, we hope this document will give you knowledge and confidence when discussing treatments so you can share in the decision-making process with your doctors. The document also provides information on ways you can look after your own heart health during treatment.

If you are a healthcare professional, the ESC hopes that this document, translated into the language of your patients, will provide them and their families and caregivers with an overview of how cardio-oncology strategies can help them in terms of treatment and management. Please share it widely with your patients and colleagues.

# Cancer and Heart Complications: What is Cardio-Oncology?

There are many different types of cancer therapies including surgery, chemotherapy and radiotherapy as well as medications such as hormonal treatments, targeted therapies and immunotherapy. Some of these therapies may increase the risk of heart or circulatory problems - we call these complications "cardiotoxicity" or "cardiovascular toxicity."

The types of complications can include:

- High blood pressure
- A heart attack or chest pain, called "angina"
- Heart muscle weakness that can develop into heart failure when the heart does not pump properly
- The heart becoming inflamed, known as myocarditis
- An irregular heartbeat called an arrhythmia
- A blood clot forming in a vein (called "deep vein thrombosis") or in the lungs (called "pulmonary embolism")

Sometimes, cardiotoxicity can limit the use of effective anticancer therapies. It is important to emphasise that these anticancer therapies have been shown to be effective in treating cancer and **the fear of possible cardiotoxicity should not prevent you from receiving the best treatment for your cancer.** It is also important to remember that cardiotoxicity does not occur in everyone receiving these treatments. Most cancer patients receive their cancer treatment without cardiovascular complications.

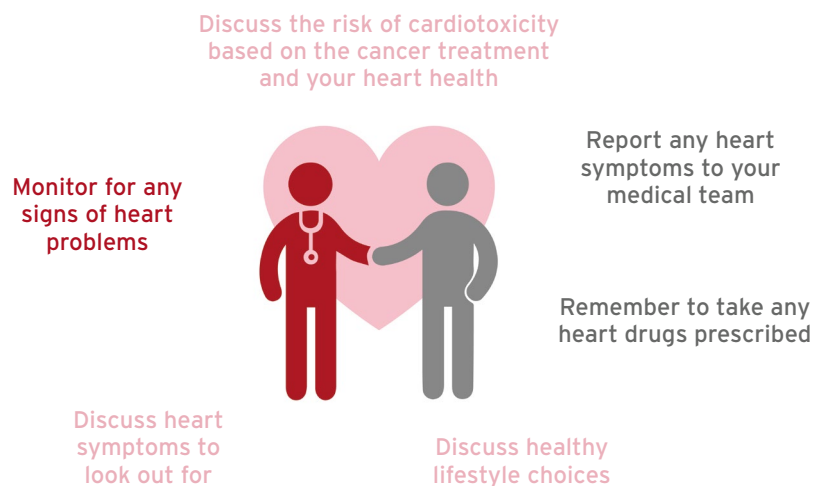
The aims of **cardio-oncology** are to allow patients with cancer to receive the best possible cancer treatment and to maintain a healthy heart.

To help with this, [ESC Guidelines](#) recommend that:

- Patients who are scheduled to receive cancer treatment should be assessed for their potential risk of heart complications
- Patients should be closely monitored, during and after treatment, so any side effects can be minimised

# Healthcare Professionals and Patients with Cancer - Working in Partnership

A partnership with your medical team is important to ensure you receive the most effective care. Your medical team will give you relevant information on your specific cancer treatment - they will discuss the benefits with you and let you know if there are any side effects related to the heart and circulation. They will monitor you for heart problems and discuss what heart symptoms to look out for and **how to keep your heart healthy**.



If you feel any unusual heart symptoms during or after your cancer treatment, it is essential that you contact your medical team immediately to be assessed and receive treatment to reduce the risk of cancer treatment interruption.

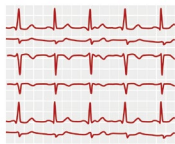
## What Can I Expect?

You will discuss the various cancer therapy options with your oncologist and once the treatment has been selected, the cancer team will work with the heart team to decide if you need tests on your heart and circulation.

- If there is **no or minimal risk** of your cancer treatment causing heart problems, you will not require any heart tests.
- If your cancer treatment has the potential to cause cardiotoxicity, the [ESC Guidelines](#) provide your medical team with information on how to assess your risk, what tests are needed to monitor your heart health and if a referral to a cardiologist (a heart doctor) is needed.

- If you need to have heart tests, these may be carried out *before* you start treatment (called “baseline” tests) to assess your risk and also to see if there are any changes during treatment.
- Heart tests may include heart rhythm tracing (called an “ECG” or “electrocardiogram”), blood tests and/or a heart scan using ultrasound (“echocardiography”), an MRI scanner or a CT scanner. These will help cardiologists to assess your heart health and to work out if you have any existing heart problems. In the case of abnormal findings, heart treatments may be started.

## Heart tests that help to assess cardiotoxicity risk



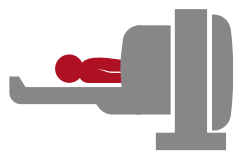
**Electrocardiogram (ECG)**  
checks the electrical activity of the heart



**Blood tests** can check if the heart is damaged (e.g. BNP/NT-proBNP and troponin)



**Echocardiogram (echo)**  
is an ultrasound of the heart that shows how well it is working



**Cardiac magnetic resonance**  
checks the function and structure of the heart



**Cardiac computed tomography**  
provides a detailed picture of your heart and blood vessels

- If your cancer treatment has the potential to cause cardiotoxicity and you are considered at **low risk**, then you may just need one or two tests during treatment and one follow-up heart check in the first year after completing your treatment.
- If your cancer treatment has the potential to cause cardiotoxicity and you are considered at **moderate risk**, then you will need closer monitoring of your heart health with more frequent tests during and after treatment.
- If your cancer treatment has the potential to cause cardiotoxicity and you are considered at **high risk** then you will need to see a cardiologist before starting treatment, and you may require heart medication (called “cardio-protection”) during your cancer therapy. The [ESC Guidelines](#) provide information to your oncologist/haematologist and your cardiologist on which heart medication to consider and which tests to carry out during cancer treatment and in the first year after treatment.

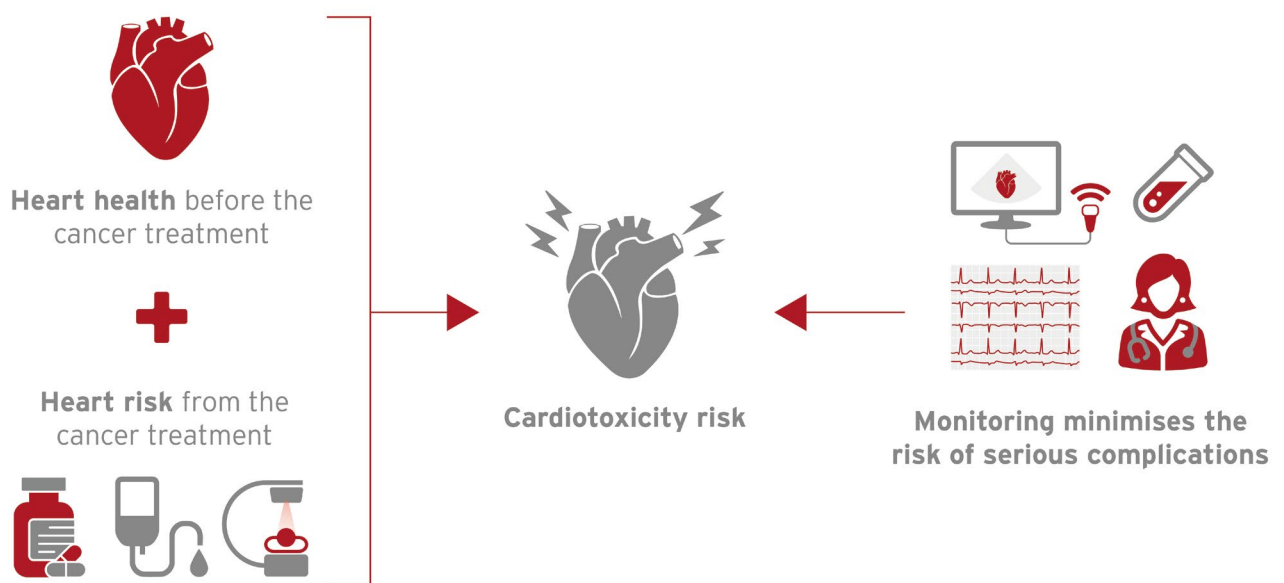
# Commonly Asked Questions Before Cancer Treatment

Remember, you can ask your medical team if there is anything you would like to discuss, but here are some common questions that patients with cancer may have:

## Am I at risk for developing cardiovascular toxicity during cancer therapy?

The risk for developing cardiovascular toxicity depends on three main factors:

- **Your heart health before cancer treatment starts**  
You may have a healthy heart or you may have a heart problem already. The [ESC Guidelines](#) provide risk assessment tools that your medical team will use to understand your risk of cardiotoxicity before you start cancer treatment.
- **The heart risk of the cancer treatment you are going to receive**  
Treatments for cancer work differently and have varying risks for causing cardiotoxicity. The cancer team will discuss these risks with you and decide which treatment is most appropriate.
- **How your heart health changes while you receive cancer treatment**  
It is important that any signs of cardiotoxicity are found early to reduce the chances of them developing into serious complications. If you are at risk, a personal monitoring plan will be put together so any signs can be detected quickly.

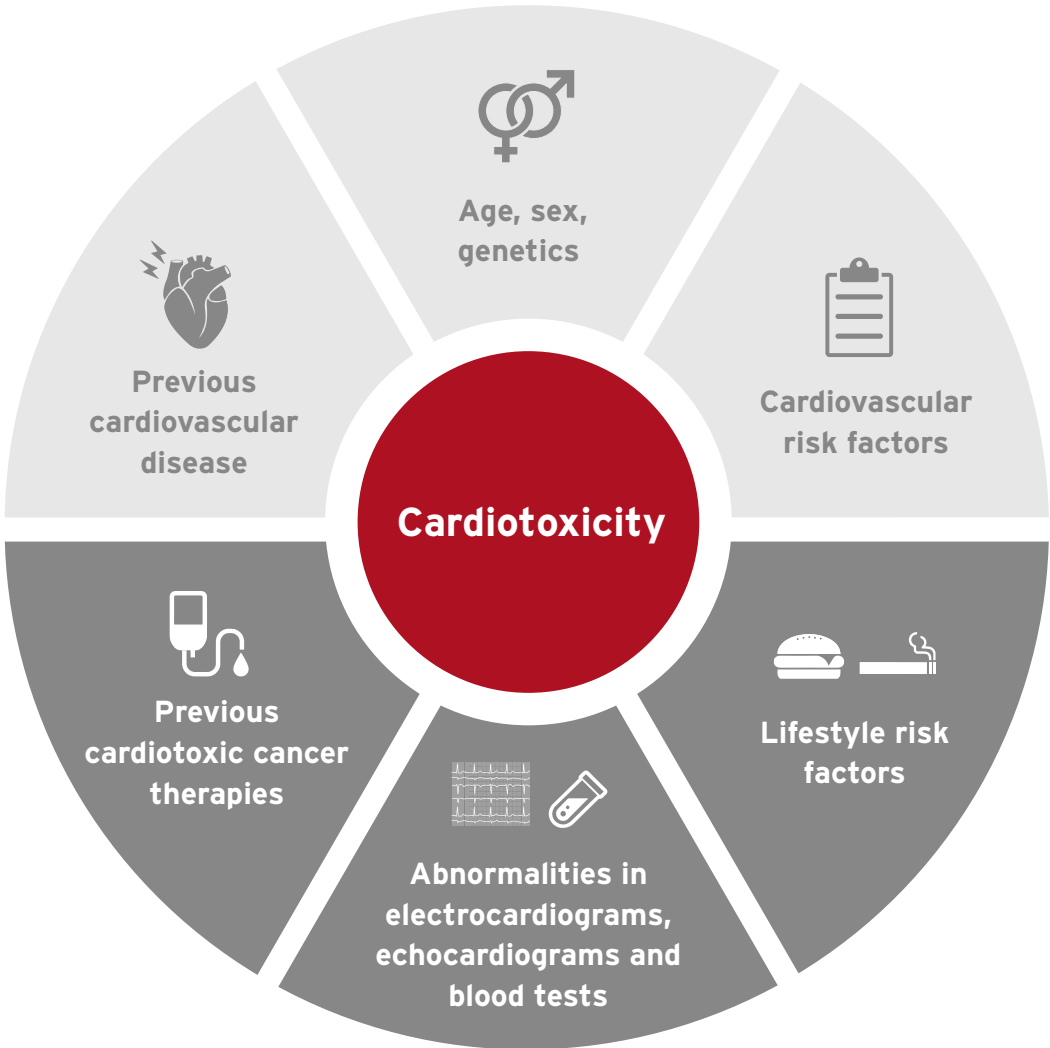


# How can my doctor and I assess my risk of developing cardiotoxicity?

The [ESC Guidelines](#) describe the factors that increase the risk of cardiotoxicity of cancer treatments. These include a person's age, whether they have had previous cancer therapies, their cardiovascular risk factors (such as blood pressure) and lifestyle (including diet and exercise).

The [ESC Guidelines](#) contain risk assessment tools, which will help your oncologist or haematologist determine your risk level. By asking you certain questions about your medical history and carrying out baseline tests, your medical team can determine your risk profile and develop a treatment plan specifically for you.

## Common examples of cardiotoxicity risk factors



## What can I do to stay healthy and well?

A healthy lifestyle can reduce your risk of developing a heart or circulation problem when you start taking your cancer therapy and improve your quality of life.

- A **healthy diet** means eating more fruit and vegetables, reducing the number of processed foods and take-aways, and avoiding high fat and high sugar foods. You can find advice on a healthy diet on the [ESC's Healthy-Heart.org website](https://www.esc.eu/Healthy-Heart.org).
- If you are overweight, ask your cancer team how you can lose weight safely after cancer treatment. In general, weight loss is not recommended during cancer treatment, but it is critical that you eat healthily.
- Try to stay active with **regular physical activity** if you can. If you feel able, you should aim for 90 to 150 minutes per week - this might involve going for a brisk 30- to 40-minute walk 3 or 4 times a week.
- **Stop smoking** and **limit any alcohol** consumption.

Any positive lifestyle changes you make will benefit your health in the long term so keep them up!



The [ESC Guidelines](#) provide your cancer and cardiology doctors with the information needed to create an individualised plan for your treatment and to protect your heart. You will need to make sure you **continue to take any prescribed heart medication** for as long as the medical team tell you. This is called “treatment adherence” and is very important to ensure that the medicines work well. The plan will also be useful to continue after your cancer treatment has finished to maintain better health.

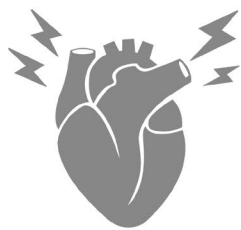


## I already have a heart problem - is it safe for me to receive cancer therapy?

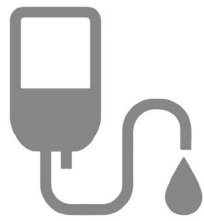
We know there is a greater risk of developing cardiotoxicity for patients who already have a heart condition. However, pre-existing heart problems usually do not prevent you from receiving the best possible treatment for your cancer.

Discuss your heart condition with your cancer team. Healthcare professionals who specialise in both cancer and heart problems will provide advice. If you are already taking tablets for high blood pressure or for a heart condition, it is important that you do NOT stop taking them without speaking to your doctor. Also, tell your medical team if you have a pacemaker or a cardiac defibrillator so they can assess appropriate monitoring strategies during radiotherapy.

As part of the shared decision-making, your cancer team will discuss the risks and benefits of the proposed cancer treatment before you start treatment. They will develop an individualised treatment plan for your heart health that will be carried out during and after your cancer treatment.



Type of heart problem



Type of cancer treatment



# Cardio-Oncology Care During Cancer Therapy

## What heart symptoms should I look out for during cancer treatment?



**Chest pain**



**Shortness of breath**



**Leg swelling**  
(in one or both legs)



**Feeling faint or dizzy**



**Increased tiredness**  
(more than usual)



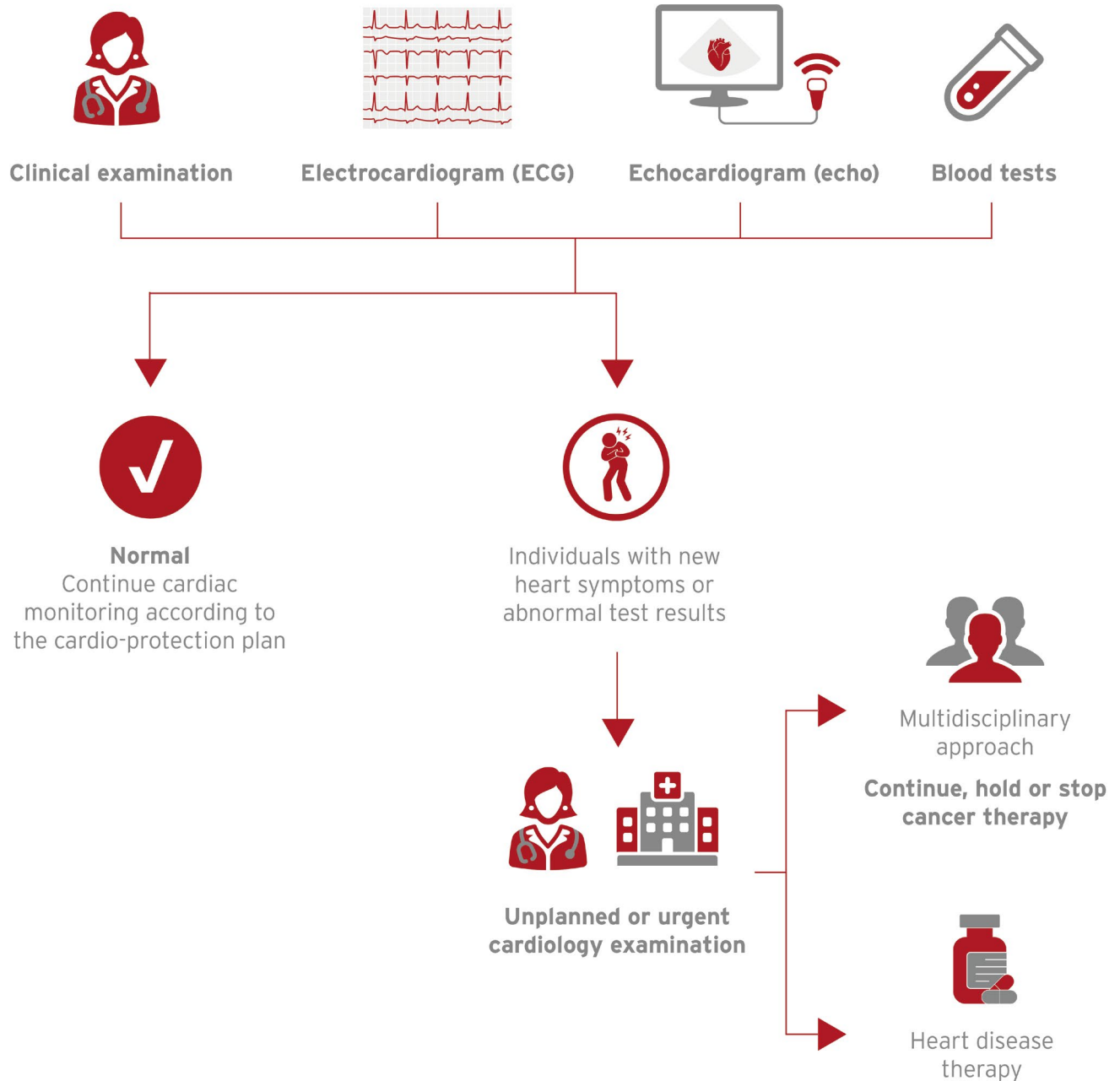
**Fast or racing heartbeat**  
called "palpitations"

If you experience any of these symptoms, please contact your doctor straight away, so that you can be assessed and follow-up appointments can be made. Not all heart problems that occur during cancer therapy are related to your cancer therapy and other potential causes may need to be investigated.

If baseline tests were done before your cancer treatment, cardiologists will be able to compare your test results over time to see if there have been any changes.

If you develop a heart or circulation condition during your cancer treatment, doctors will decide if the best option is to keep going with your current treatment, stop it temporarily or change to a different treatment.

The [ESC Guidelines](#) provide structured plans for how your oncologist and cardiologist can look after you in this situation. They will discuss this with you and a shared decision will be made together.



## Cardio-Oncology Care After Cancer Treatment

In some people, cancer treatment (including cancer drugs and/or radiation therapy) may affect their heart and circulation months to years after completing therapy, for example, developing high blood pressure, heart muscle weakness, coronary artery disease, heart rhythm disturbances (arrhythmias) or problems with the valves in your heart.

Your family doctor will be the main point of contact after cancer treatment has been completed and the cancer team will organise follow-ups as required - this may be from every few months to one follow-up appointment a year.

## Who is at risk of cardiotoxicity after cancer treatment has finished?

The risk of long-term effects depends on several factors. People most at risk include those with existing heart-related risk factors (e.g. high blood pressure or diabetes) or existing heart conditions. The type of cancer treatment received also matters, for example, risk is increased with anthracycline chemotherapy, such as doxorubicin, epirubicin, daunorubicin and idarubicin, with chest radiation, and with long-term hormonal treatments, such as those for prostate cancer. Long-term effects may be more likely if you developed a new heart problem during treatment, but this depends on how mild or serious that heart problem is, and whether it required heart medication. Other factors such as lifestyle and environment are also important and any lifestyle-related changes you make will help reduce the risk.

## What can I do to reduce the risk of late effects?

You can reduce your risk of cardiovascular disease by:

- Making healthy lifestyle choices (diet, exercise, weight control, smoking cessation)
- Working with your medical team to manage your cardiovascular risk factors (high blood pressure, diabetes and cholesterol levels)
- Monitoring your blood pressure at home
- Taking your prescribed medication (e.g. for high blood pressure)

The [ESC Guidelines](#) recommend that all cancer patients who have received a cancer treatment with the potential to cause cardiotoxicity have regular cardiac check-ups after cancer treatment - it is very important that you attend these appointments. The type and duration of monitoring will depend on your risk. Your medical team will determine if you are at low, moderate or high/very high risk of cardiovascular disease and you will be invited for follow-up visits at the recommended frequency suggested in the [ESC Guidelines](#). In between follow-up visits, it is essential that you notify your doctors of any new heart-related symptoms.

## Long-term surveillance in asymptomatic cancer survivors



### How does this affect me as an adult *survivor of childhood and adolescent cancer*?

Advances in the treatment of childhood and adolescent cancers have led to significant improvements in survival. However, cardiovascular disease can occur years after treatment for childhood cancer, so it is important that you have regular follow-up with your medical team to manage your cardiovascular risk factors. For some individuals, the [ESC Guidelines](#) recommend an echocardiogram (heart ultrasound) every 2-5 years, depending on your risk level.

## How does this affect me as a woman of child-bearing age?

If you are female and you had cancer as a child, adolescent, or young adult, and if you were treated with anthracycline chemotherapy and/or chest radiation, you may be at higher risk of developing heart problems as an adult. The [ESC Guidelines](#) recommend that you should have an assessment of your cardiovascular health by a cardiologist prior to or early in your pregnancy.

## Summary

In summary, your cancer team will work closely with the heart team, before your treatment, to ensure you receive the best possible cancer treatment while minimising any risk to your heart and circulation.

Monitoring will take place during treatment and once treatment is completed, if needed, to detect any heart side effects early.

You can look after your own heart health by notifying your medical team if you experience any heart symptoms and also by making healthy lifestyle choices. And don't forget, if you have any questions, do ask!



# Definitions

**Cardiac biomarkers** are substances that are released into the blood when the heart is damaged or stressed.

**Cardiac computed tomography** uses X-rays to create detailed pictures of your heart and blood vessels.

**Cardiac magnetic resonance** imaging uses magnetic waves to create detailed pictures and videos showing the structure and the function of the heart.

**Chemotherapy** is drugs that target cancer growth, either by killing the cells or by stopping or slowing them from growing and dividing.

**Echocardiography** is an imaging technique that uses ultrasound (sounds at a very high frequency) to show the structure and the function of the heart and how well your heart is working.

**Electrocardiography** looks at the electrical activity of the heart to help study the heart's rhythm.

**Hormone therapy** inhibits the growth of certain cancer cells that are stimulated by hormones produced by the patient (i.e. some breast cancers are driven by oestrogen and prostate cancers are usually driven by testosterone).

**Immunotherapy** aims to stimulate the body's own immune system to destroy cancer cells. There are different types of cancer immunotherapy, but a common type is called "checkpoint inhibitors."

**Radiotherapy** uses high-energy radiation to damage cancer cells and destroy them.

**Targeted therapies** block specific signals that tell cancer cells to grow, divide and spread.

This guide for patients is a simplified version of the ESC Clinical Practice Guidelines on cardio-oncology. The full guidelines are available in English on the ESC website ([www.escardio.org/Guidelines/Clinical-Practice-Guidelines/Cardio-oncology-guidelines](http://www.escardio.org/Guidelines/Clinical-Practice-Guidelines/Cardio-oncology-guidelines)); your healthcare provider will be familiar with its content and recommendations. Online translator tools may be able to translate the text and present it in an alternative language, with limitations.

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## Disclaimer

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