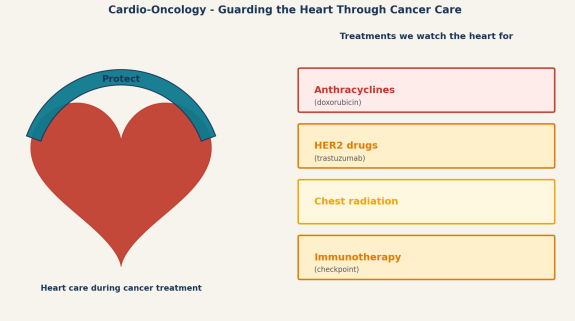
Understanding Cardio-Oncology

Protecting your heart before, during, and after cancer treatment

Many cancer treatments can strain the heart. Watching closely keeps both your cancer care and your heart on track.



Online: https://go.riasalimd.com/cardio-onc-guide

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Names & Terms You Will Hear

Term	Meaning
Cardio-oncology	A team approach where heart doctors and cancer doctors work together to protect your heart during cancer care.
Cardiotoxicity	Heart damage caused by a cancer treatment. It can be mild and silent or, less often, cause heart failure.
CTRCD (cancer-therapy-related cardiac dysfunction)	The medical name for a drop in the heart's pumping strength caused by cancer treatment. It is graded mild, moderate, or severe.
Ejection fraction (EF)	How much blood the heart pumps out with each beat. A normal EF is about 55% or more. A falling EF is an early warning sign.
GLS (global longitudinal strain)	A newer echo measure of how well the heart muscle squeezes. It can spot trouble before the ejection fraction drops.
Anthracyclines	A powerful family of chemo drugs (such as doxorubicin). Very effective against cancer, but the most likely to strain the heart, especially at higher total doses.
HER2-targeted therapy	Drugs such as trastuzumab (Herceptin) used for some breast cancers. They can lower the ejection fraction, which often recovers when the drug is paused.
Immune checkpoint inhibitor	A type of immunotherapy. Rarely it can inflame the heart muscle (myocarditis), which is uncommon but serious.
Cardioprotection	Steps taken to shield the heart, such as heart medicines, careful dosing, and close monitoring.

What Is Cardio-Oncology?

- Cardio-oncology is a team. Your cancer team and a heart doctor work together. The goal is simple: treat the cancer fully and keep the heart safe.
- Some cancer treatments can strain the heart. The main ones are anthracycline chemo (like doxorubicin), HER2 drugs (like trastuzumab), chest radiation, and some types of immunotherapy.
- Most heart strain is mild and silent at first. That is why we check the heart before treatment, then again on a set schedule.
- We use a heart ultrasound (echo) plus a newer measure called strain (GLS). Blood tests help too. Together they catch changes early.
- Caught early, most heart changes can be treated or even reversed. Cancer treatment can often go on safely.
- Not everyone needs the same watching. Your plan depends on your drugs, the dose, and your own heart history.

The Main Heart-Stressing Treatments - Side by Side

Treatment	Example	Main heart effect	Often reversible?
Anthracyclines	Doxorubicin	Lower pumping strength; dose-related	Less so if caught late; early care helps
HER2 drugs	Trastuzumab	Lower ejection fraction	Often recovers after a pause
Chest radiation	Left-sided fields	Stiff muscle, valves, arteries (years later)	Slow to develop; managed long-term
Immunotherapy	Checkpoint inhibitors	Rare heart muscle inflammation	Serious; needs urgent care

How We Grade a Drop in Pumping Strength (CTRCD)

Mild

- Ejection fraction still 50% or more
- Strain (GLS) drops more than 15%, or blood markers rise
- No symptoms
- Watch closely; often start a protecting pill

Moderate

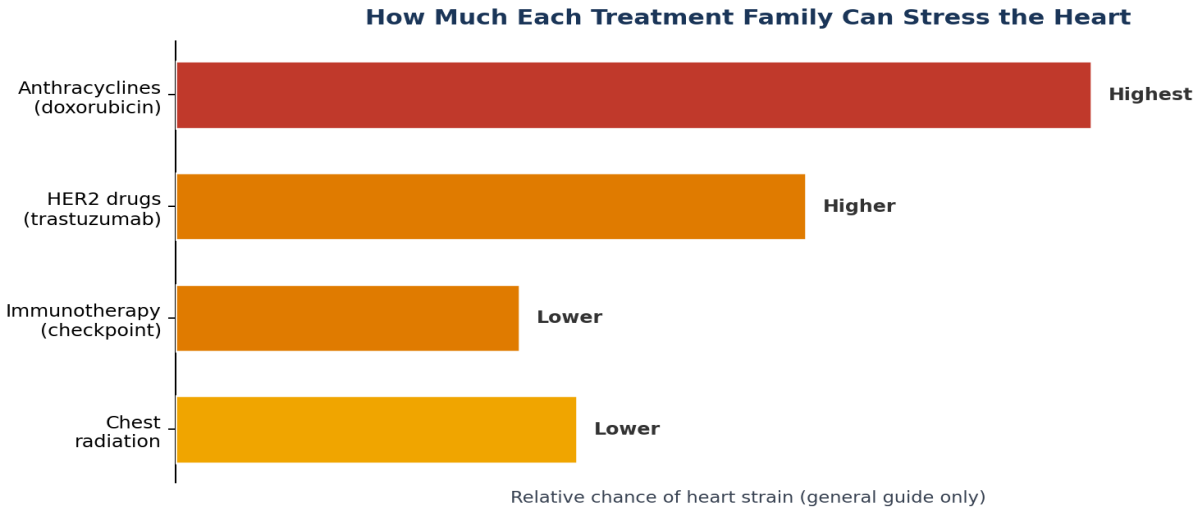
- Ejection fraction falls to 40-49%
- Or a clear drop with rising markers
- May have mild symptoms
- Start heart medicine; review cancer plan

Severe

- Ejection fraction falls below 40%
- Or clear heart failure symptoms
- Needs prompt heart-failure care
- Cancer plan reviewed by the whole team

Why It Matters

- Cancer survival keeps getting better. More people live long enough that heart health after treatment really matters.
- Heart strain often has no signs early on. Feeling fine does not mean the heart is fine. Only testing can show it.
- Strain (GLS) can fall before the EF drops. A strain drop of more than 15% is an early red flag, even when the EF still looks normal.
- A late heart problem can force cancer care to stop. That can hurt cancer outcomes. Watching early lets us guard the heart and keep cancer care going.
- The chart below shows that some treatments stress the heart more than others. Knowing yours guides how closely we watch.
- We use heart medicines we already trust for heart failure - ACE inhibitors, ARBs, and beta-blockers - to help guard the heart during cancer care.



Your own risk depends on dose, prior heart health, and other treatments. This is a general guide, not your personal number.

Some treatment families stress the heart more than others. Anthracyclines carry the highest risk; your own risk also depends on dose and heart history.

The silent-strain trap: The earliest heart changes from cancer treatment usually cause no symptoms at all. Strain (GLS) can fall while the ejection fraction still looks normal. That is why we measure the heart on a schedule - so we can act early, before you ever feel it.

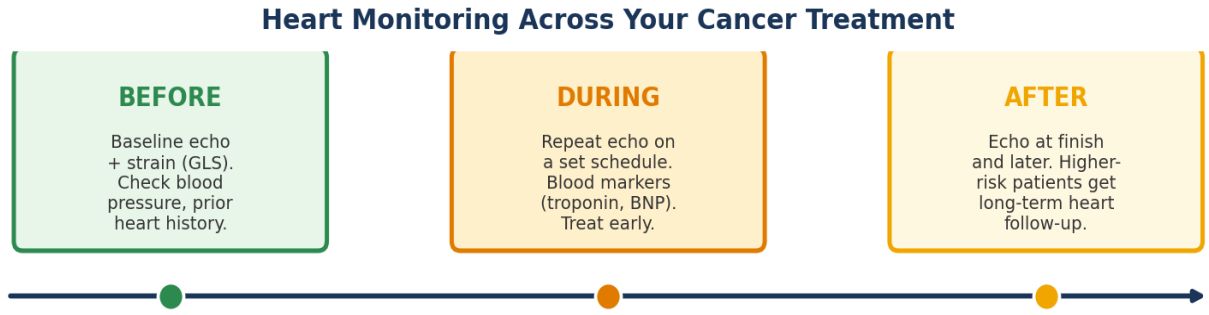
Risk Factors

Some patients are more likely to develop this condition. Knowing your risk helps your care team take extra precautions.

Risk Factor	Why It Increases Risk
High total anthracycline dose	The risk of heart strain rises as the lifetime dose of doxorubicin and similar drugs adds up.
Chest radiation, especially left-sided	Radiation near the heart can stiffen the heart muscle, valves, and arteries over years.
Getting more than one heart-stressing treatment	Anthracycline plus a HER2 drug, or chemo plus chest radiation, raises risk more than either alone.
Existing heart disease or low-normal EF	A heart that is already weakened has less reserve to handle added strain.
High blood pressure, diabetes, or high cholesterol	These common conditions add stress and make heart strain more likely.
Older age or being very young (children)	Both ends of the age range are more sensitive to heart strain from some treatments.
Smoking and being inactive	Both worsen heart health and add to treatment-related risk.

Treatment Options

- Step one is a baseline. Before treatment that can affect the heart, we check the EF and strain. We also review your blood pressure and heart history.
- During treatment, we repeat the echo on a schedule. Your risk and your drugs set the timing. Blood tests (troponin, BNP) can add early warning.
- If the heart shows early strain, we often start a heart pill and keep watching - rather than stop cancer care right away.
- ACE inhibitors or ARBs (such as candesartan) and beta-blockers (such as carvedilol or metoprolol) are the main heart-guarding pills.
- Some high-risk patients on anthracyclines can get a medicine called dexrazoxane to shield the heart. Your team decides if it fits your case.
- Statins may help guard the heart in some patients on anthracyclines. The STOP-CA trial supports this in lymphoma care.
- Keeping blood pressure, blood sugar, and cholesterol in range during treatment lowers the chance of heart strain.
- After treatment, higher-risk patients get long-term heart follow-up, since some effects can show up years later.



The same heart pictures, repeated over time, catch trouble early - while it is still easy to fix.

The same heart pictures, repeated before, during, and after treatment, catch trouble early - while it is still easy to fix.

What the Monitoring Tests Tell Us

Test	What it measures	Why it helps
Echocardiogram (echo)	Ejection fraction and heart structure	Painless, no radiation; the main tool we repeat over time.
Strain (GLS)	How well the muscle squeezes	Spots early trouble before the ejection fraction drops.
Blood tests	Troponin and BNP	Can flag heart stress between echoes.
Cardiac MRI	Detailed heart images	Used when the echo is unclear or myocarditis is a concern.

Anthracyclines (such as doxorubicin)

- Very effective chemo, used for many cancers - but the most likely to strain the heart.
- Risk rises with the total lifetime dose. Your team tracks the running total.
- We get a baseline echo with strain, then repeat it on a schedule during and after treatment.
- For higher-risk patients, options include dexrazoxane, a gentler (liposomal) form, a heart-guarding pill, and in some cases a statin.

HER2 Drugs (such as trastuzumab / Herceptin)

- Used for some breast and stomach cancers. Can lower the ejection fraction.
- The good news: the drop often recovers after a short pause and heart medicine.
- We usually check the heart about every 3 months during treatment.
- Risk is higher when given close to anthracyclines, so the team spaces and watches carefully.

Chest Radiation and Immunotherapy

- Chest radiation, especially left-sided, can stiffen the heart muscle, valves, and arteries - often years later. Modern planning lowers the dose to the heart.
- Higher-risk patients get long-term heart follow-up even after cancer care ends.
- Immune checkpoint inhibitors rarely inflame the heart muscle (myocarditis). It is uncommon but serious and treatable when caught fast.
- Report new chest pain, breathlessness, palpitations, or fainting right away on these treatments.

Comfort Measures at Home (No Medication Needed)

These simple steps support healing and ease symptoms. Use them alongside any medication your doctor prescribes.

- Stay active within your limits. Even gentle walking during treatment helps protect the heart and ease fatigue.
- Ask about cardio-oncology rehab. A supervised exercise program is safe for many patients and helps the heart and energy.
- Eat heart-healthy: more vegetables, fruit, whole grains, and fish; less salt and processed food.
- Keep blood pressure in range at home. Bring your home readings to visits.
- Do not smoke, and limit alcohol. Both add strain during treatment.
- Weigh yourself a few times a week. Quick weight gain can be an early sign of fluid buildup - report it.
- Stay well hydrated unless your team tells you to limit fluids.

Risks, Benefits, and Alternatives

Every choice has trade-offs. Use this table to start the shared decision conversation.

Option	Risks	Benefits	Alternatives
Baseline + scheduled echo with strain (GLS)	Extra appointments and tests. Occasionally finds a change that turns out minor. Small added cost.	Catches heart strain early, often before symptoms. Lets cancer care continue safely. Painless, no radiation.	Echo at fewer time points (lower-risk patients). Cardiac MRI when echo is unclear.
Heart-protecting medicine (ACE inhibitor, ARB, or beta-blocker)	Low blood pressure, dizziness, slow heart rate, cough (ACE inhibitors). Daily pill.	Helps prevent or reverse a falling EF. Lets you stay on cancer treatment. Uses medicines we know well.	Watchful waiting (lowest-risk patients). Tighter monitoring without daily medicine.
Dexrazoxane during anthracycline chemo	Given by IV with each dose. May lower blood counts. Used in selected high-risk cases only.	The only drug FDA-approved to shield the heart from anthracyclines. Lowers heart failure events in high-risk patients.	Lower anthracycline dose. A different chemo drug. Liposomal doxorubicin (a gentler form).
Statin during anthracycline chemo (selected patients)	Muscle aches, rare liver changes. Daily pill.	May reduce the drop in ejection fraction (STOP-CA trial in lymphoma). Also treats cholesterol.	No statin if not otherwise needed. Focus on other heart-protecting steps.
Pause or change cancer treatment for a heart problem	May affect cancer control if done too soon or for too long. A hard trade-off.	Protects the heart when strain is moderate or severe. Many HER2-related drops recover after a pause.	Lower dose, slower schedule, or a different drug. Treat the heart and continue when safe.

Working as a Team - and Who Joins Your Care

- Your oncologist leads cancer treatment. A cardiologist (heart doctor) joins to protect your heart - this partnership is cardio-oncology.
- Decisions about pausing or changing treatment for a heart problem are shared between both teams, with you at the center.
- Bring a list of all your treatments and doses to heart visits. It helps us judge your risk.
- Ask for a cardio-oncology referral if you have heart disease, are getting higher-risk treatment, or had heart strain in the past.

Common Misconceptions

Myth	Reality
If my heart felt fine, the chemo did not hurt it.	Early heart strain usually has no symptoms. The only way to know is to measure the heart with an echo and strain. Feeling fine is good news, but it is not proof.
Heart damage from cancer treatment is always permanent.	Often it is not. Caught early, many drops in pumping strength improve with heart medicine - and some, like many HER2-related drops, recover after a short pause.
Watching my heart will get in the way of treating my cancer.	It is the opposite. Early heart checks let cancer treatment continue safely. The aim is to avoid a late heart problem that forces treatment to stop.
Only chemo affects the heart.	Chest radiation, some HER2 drugs, and certain immunotherapies can also affect the heart. Even radiation given years ago can show up later.
I am too healthy to need heart monitoring.	Even strong, healthy hearts can be strained by higher-risk treatments. Your plan is based on the drugs and dose, not just how you feel.
If I need a heart medicine, I will have to stop chemo.	Usually not. Most patients start a heart-protecting pill and keep going with cancer treatment while we watch closely.
Heart problems only happen during treatment.	Some effects appear months or years later, especially from anthracyclines and chest radiation. That is why higher-risk patients get long-term follow-up.

Possible Complications

Knowing what can go wrong helps you spot problems early. Most complications are uncommon, especially with treatment.

Where / What	What Can Happen
Heart muscle (pumping strength)	A drop in ejection fraction is the most common heart effect. It is graded mild, moderate, or severe. If it leads to symptoms, it becomes heart failure. See our Heart Failure guide for more.
Heart muscle inflammation (myocarditis)	A rare but serious effect of immune checkpoint inhibitors. The heart muscle becomes inflamed. It needs urgent care. Warning signs include new chest pain, severe shortness of breath, or fainting.
Heart rhythm	Some treatments and a strained heart can trigger an irregular rhythm such as atrial fibrillation. This can cause palpitations and raise stroke risk. See our Atrial Fibrillation guide.
Coronary arteries	Chest radiation and some drugs can speed up plaque buildup in the heart's arteries. This can raise the long-term risk of chest pain or heart attack.
Heart valves and lining	Chest radiation over years can stiffen heart valves and the sac around the heart (pericardium), sometimes needing treatment later.
Blood pressure and clots	Some cancer drugs raise blood pressure or the risk of blood clots. Both are watched and treated during care.

Urgent on immunotherapy: Checkpoint immunotherapy can rarely inflame the heart muscle (myocarditis). New chest pain, severe shortness of breath, a racing heartbeat, or fainting needs same-day care - call 911 for chest pain with severe breathlessness.

Points to Know

If you remember nothing else, remember these key points.

- Cardio-oncology means your heart doctor and cancer doctor work as a team to protect your heart while treating your cancer fully.
- Get a baseline heart check (echo with strain) before treatment that can affect the heart.
- Early heart strain is usually silent. Scheduled echoes and blood tests catch it before you feel it.
- A drop in strain (GLS) of more than 15% is an early warning, even when the ejection fraction still looks normal.
- Caught early, most heart changes can be treated or reversed with medicines you can take while cancer care continues.
- Anthracyclines carry the highest heart risk, especially at high total doses; HER2 drugs and chest radiation add risk too.
- Controlling blood pressure, sugar, and cholesterol - plus staying active - lowers your heart risk during treatment.
- Tell us about new shortness of breath, swelling, chest pain, palpitations, or fast weight gain right away.

When to Call Us - and When to Call 911

If you are not sure, call. We would rather hear from you twice than miss a real problem.

- New or worsening shortness of breath, especially when lying flat - call us today.
- New swelling of the legs, ankles, or belly - call us today.
- Fast weight gain (over 3 pounds in 2 days, or 5 pounds in a week) - call us today.
- New palpitations or a racing, irregular heartbeat - call us this week.
- Unusual fatigue that is new or much worse than your usual treatment tiredness - call us.
- Fainting or near-fainting - call us today; if you actually pass out, call 911.
- Chest pain or pressure, or chest pain with severe breathlessness - call 911. This is urgent on immunotherapy.
- Bring your home blood pressure and weight log to every visit so we can spot trends early.

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Trusted Resources

The links below are the trusted resources Dr. Ali used to write this guide and that he recommends you visit for more information. Each is a clickable link in the digital version and a Short.io tracked URL on the printed version.

- Cleveland Clinic - Cardio-Oncology - Patient-friendly overview of protecting the heart before, during, and after cancer treatment.
- National Cancer Institute - Cardiotoxicity and Cancer Treatment - NIH explainer of which treatments affect the heart and what warning signs to report.
- American Heart Association - Cancer Treatment and Your Heart - AHA patient hub on heart health during and after cancer care.
- Mayo Clinic - Chemotherapy and the Heart - Plain-language answers on how cancer treatment can affect the heart and how risk is lowered.

Sources Used to Build This Guide

Every recommendation in this guide is grounded in one or more of the studies, guidelines, or trusted resources below. Short links are tracked so Dr. Ali can see which references patients are reading; nothing personally identifying is captured.

- 2022 ESC Guidelines on Cardio-Oncology (ESC/EHA/ESTRO/IC-OS) *[Guideline]*
  Primary guideline for baseline risk stratification, echo/strain/biomarker surveillance schedules, the three-tier cancer-therapy-related cardiac dysfunction (CTRCD) definition, and prevention/management of cardiotoxicity.
- Cleveland Clinic - Cardio-Oncology *[Clinical]*
  Patient-facing explainer of protecting the heart before, during, and after cancer treatment.
- AHA Scientific Statement - Cardio-Oncology Rehabilitation *[Guideline]*
  AHA statement on exercise, monitoring, and rehabilitation to manage cardiovascular outcomes in cancer patients.
- National Cancer Institute - Cardiotoxicity (Heart Problems) and Cancer Treatment *[Clinical]*
  NIH/NCI patient explainer of which treatments affect the heart and warning signs to report.
- STOP-CA Randomized Trial - Atorvastatin for Anthracycline Cardiac Dysfunction (JAMA 2023) *[Trial]*
  Randomized trial of statin (atorvastatin) cardioprotection in lymphoma patients receiving anthracyclines; informs the prevention discussion.
- PRADA Trial - Candesartan and Metoprolol for Prevention of Cardiac Dysfunction in Breast Cancer *[Trial]*
  Randomized trial of candesartan (ARB) and metoprolol (beta-blocker) during adjuvant breast cancer therapy; informs neurohormonal prevention.
- ASCO Clinical Practice Guideline - Prevention and Monitoring of Cardiac Dysfunction in Cancer Survivors *[Guideline]*
  Oncology-society guidance on identifying at-risk patients and surveillance during and after potentially cardiotoxic therapy.
- Mayo Clinic - Chemotherapy and Heart Damage *[Clinical]*
  Plain-language patient framing of how cancer drugs and radiation can affect the heart and how risk is lowered.

About This Guide

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Reviewer note: Reviewed: Cleveland Clinic, Mayo Clinic, AHA, and the National Cancer Institute patient pages. This guide adds a before/during/after monitoring timeline, a treatment-family risk chart, a side-by-side comparison table, per-treatment deep dives, and an RBA section that names the 2022 ESC Cardio-Oncology Guidelines plus the STOP-CA and PRADA prevention trials.

Disclaimer

This guide is for educational purposes only and does not replace medical advice from your physician. Recommendations may not apply to every patient. Always follow the specific instructions of Dr. Ali and your care team. In an emergency call 911 or go to the nearest emergency department.

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