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Cancer Treatment and Your Heart

Some cancer treatments can affect the heart. Most people who get them do not develop heart failure.

~1%
of people on checkpoint inhibitors develop myocarditis, most often in the first three months

3 months
is the typical gap between echocardiograms, checking pumping and strain, while on trastuzumab

Over 15%
drop from your baseline in strain, an extra echo measurement, is enough to start heart-protecting medicine

WHICH TREATMENTS, WHICH RISKS

Cancer treatments that can affect the heart

Anthracyclines doxorubicin (Adriamycin), daunorubicin, epirubicin, idarubicin	Can weaken the heart muscle. The risk rises with your lifetime dose and can show up years later.
HER2-targeted therapy trastuzumab (Herceptin), pertuzumab, ado-trastuzumab emtansine	Can weaken the heart muscle, usually reversibly. Given after anthracyclines, the risk is higher.
Checkpoint inhibitors pembrolizumab, nivolumab, ipilimumab	Myocarditis, an inflammation of the heart muscle. Uncommon, and serious when it happens.
Kinase inhibitors sunitinib, ibrutinib, imatinib and others	Varies by drug. Sunitinib can weaken the muscle and raise blood pressure. Ibrutinib can trigger atrial fibrillation and bleeding. Imatinib is gentler on the heart, though not risk-free.
Chest radiation for Hodgkin lymphoma, breast, lung or esophageal cancer	Coronary artery blockages, valve disease, a stiff sac around the heart and rhythm problems. These may not show up for 10, 20 or 30 years.

HOW YOUR HEART IS WATCHED

A schedule built around your treatment

After anthracyclines, trastuzumab or chest radiation

Before treatment
Echocardiogram, ideally with strain
Troponin and BNP blood tests
Risk factor review

During treatment
Trastuzumab echo about every 3 months
High-dose anthracyclines echo around dose milestones
Checkpoint inhibitors led by symptoms

End of treatment
Echocardiogram around the time treatment finishes

At 1 year
Another echocardiogram

After that
Every 2 to 5 years if normal, no symptoms
Every year if higher risk

Chest radiation adds a long tail

Heart effects can appear 10, 20 or 30 years later. ASCO and the ESC advise a baseline heart check around 5 years after, then periodic echocardiograms, and a stress test for symptoms or a substantial heart dose.

Ask about your heart

If you're starting cancer treatment, ask about your heart. If you finished treatment and never had cardiac follow-up, ask now. The testing is straightforward.

WHAT TO DO IF HEART NUMBERS DROP IS ON THE BACK

IF YOUR NUMBERS SLIP

A dip is a signal to act

IF HEART NUMBERS DROP DURING TREATMENT

chemo doesn't automatically stop

Strain on your echo	An extra echo measurement that catches subtle weakening before the main pumping number, the ejection fraction, drops. Not every echo lab does it, so ask whether yours will. The 2022 ESC cutoff is a drop of more than 15 percent (ESMO uses 12).
What happens	Heart-protecting medicine starts, usually a beta-blocker plus an ACE inhibitor or ARB, sometimes with an SGLT2 inhibitor. These don't interfere with how well chemo works. A repeat echo follows, often in 4 to 6 weeks. You, your oncologist and your cardiologist then decide whether treatment continues, pauses or shifts to a regimen with less heart toxicity.
On trastuzumab	Under the 2022 ESC guideline, it is paused for moderate or severe symptoms or an ejection fraction below 40 percent, and restarted once it recovers to 40 percent or more, ideally 50. Between 40 and 49 percent without symptoms, it usually continues with heart medicine and close monitoring.
On anthracyclines	The plan depends on how much drug you've already received and how much is left in the planned course.
Checkpoint myocarditis	The drug is usually stopped, often permanently, and the inflammation is treated aggressively with high-dose steroids.

MEDICINES THAT PROTECT THE HEART

none of them are cancer drugs

Beta-blockers	Carvedilol or bisoprolol slow the heart and reduce stress on the muscle.
ACE inhibitors and ARBs	Lisinopril, losartan or candesartan relax the blood vessels and lower the heart's workload. In a 2016 trial, candesartan reduced the drop in pumping during breast cancer treatment.
SGLT2 inhibitors	Dapagliflozin and empagliflozin protect the heart in ordinary heart failure, and the evidence in cardio-oncology is still being built.
Dexrazoxane	Given alongside anthracyclines to reduce heart muscle injury, mostly in children and adults on very high cumulative doses. Older second-cancer worries have largely been walked back.

WHEN TO GET HELP

Call 911 on a checkpoint inhibitor	Chest pain, fainting or near-fainting, sudden shortness of breath, or palpitations with lightheadedness. Myocarditis usually starts in the first weeks (median about 30 days).
Same day on a checkpoint inhibitor	New muscle weakness, drooping eyelids, double vision, trouble swallowing or unexplained fatigue. Most of the time it won't be the heart, and it still needs to be ruled out fast.
Anthracycline or trastuzumab	Call oncology the same day for shortness of breath that gradually gets worse, or swelling.
After treatment	New shortness of breath, chest pain, palpitations, ankle swelling or unexplained fatigue override the follow-up schedule.

BRING YOUR HISTORY

Ask what your cumulative anthracycline dose was, whether you received trastuzumab, and whether you had chest radiation. If you had chest radiation, bring that history to every cardiology visit for the rest of your life, because records get lost.

READ THE FULL ARTICLE

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cardio-oncology

For education only, and not a substitute for advice from your own physician. Sources include the 2022 ESC cardio-oncology guidelines, the 2017 ASCO guideline on cardiac dysfunction in cancer survivors, the PRADA trial (European Heart Journal 2016), Thavendiranathan et al. (JACC 2021) and Mahmood et al. (JACC 2018).

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