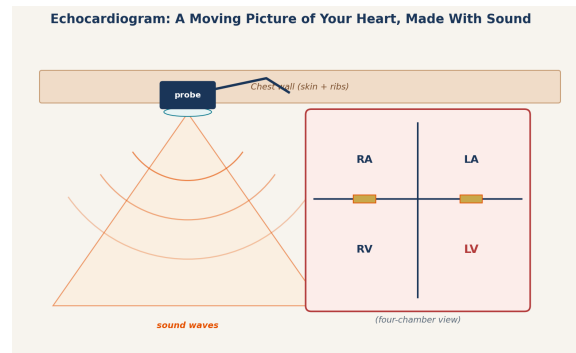


Echocardiogram

What the Test Shows, How It Is Done, and How to Read Your Report

An echo is a moving picture of your heart, made with sound. No needle for a standard echo. No radiation.



Online: <https://go.riasalimd.com/echo-guide>

Rias KS Ali, MD FACC

Board Certified in Interventional Cardiology & Cardiovascular Disease

4740 Mile Stretch Drive, Holiday FL 34690 | Office: (727) 943-5200 | Fax: (727) 943-5201 |
RiasAliMD.com

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Names & Terms You Will Hear

Term	Meaning
Echocardiogram (echo)	An ultrasound test of the heart. A small probe sends sound waves into the chest and listens for the echoes that come back to build a moving picture of the heart.
Transthoracic echocardiogram (TTE)	The standard echo. The probe is placed on the chest with a layer of gel. No IV and no fasting are needed for a routine TTE.
Transesophageal echocardiogram (TEE)	A special echo where a thin probe is gently passed into the food pipe (esophagus) to get a closer view of the heart - especially the valves and the left atrium. Done under light sedation.
Stress echocardiogram	An echo done before and right after exercise on a treadmill - or after a medicine (dobutamine) that makes the heart work harder. Looks for blood-flow problems that only show up under stress.
Contrast echocardiogram	A small amount of a special microbubble liquid (Definity or Lumason) is given through an IV to brighten the picture inside the heart. The bubbles are made of gas - NOT iodine dye - and are very safe.
Bubble study (saline contrast)	Salt water is shaken to make tiny bubbles, then injected through an IV. Looks for a hole between the upper chambers of the heart (PFO or ASD). Different from microbubble contrast.
Doppler	A part of every echo that measures how fast blood is moving through the valves and the heart. Color Doppler paints the blood flow red or blue on the picture.
LVEF (left ventricular ejection fraction)	The pumping number. The percent of blood the main pump (LV) pushes out with each beat. Normal is about 55 to 70 percent.
E/A and E/e' (diastolic function)	Two Doppler measurements that tell us how well the LV relaxes and fills between beats. A 'pseudonormal' or 'restrictive' pattern is more worrisome.



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Term	Meaning
Global longitudinal strain (GLS)	A newer measurement that picks up subtle pumping problems before the LVEF drops. Often added for chemotherapy patients and for some cardiomyopathies.
Pericardial effusion	Extra fluid inside the sac around the heart. The echo can see and measure it.
PASP (pulmonary artery systolic pressure)	An estimate of the pressure in the lung arteries, made from a Doppler signal of the tricuspid valve. A higher number suggests pulmonary hypertension.
Ultrasound enhancing agent (UEA)	The formal name for the microbubble contrast (Definity, Lumason, Optison). Used when the LV walls are hard to see on a routine TTE.
Trace / mild / moderate / severe	The grading words used for valve leaks (regurgitation) and stiff valves (stenosis). The team uses both the picture and the Doppler numbers to decide the grade.
Sonographer	The specially trained technologist who actually performs the echo. The cardiologist then reads the recorded images and writes the report.

The two big things to know going in. First: an echo uses *sound*, not x-rays - there is no radiation and no IV for a standard echo on the chest. Second: the 'dye' used in some echoes (Definity, Lumason) is microbubbles in a fatty shell, NOT iodine - so it is safe in kidney disease and iodine allergy.



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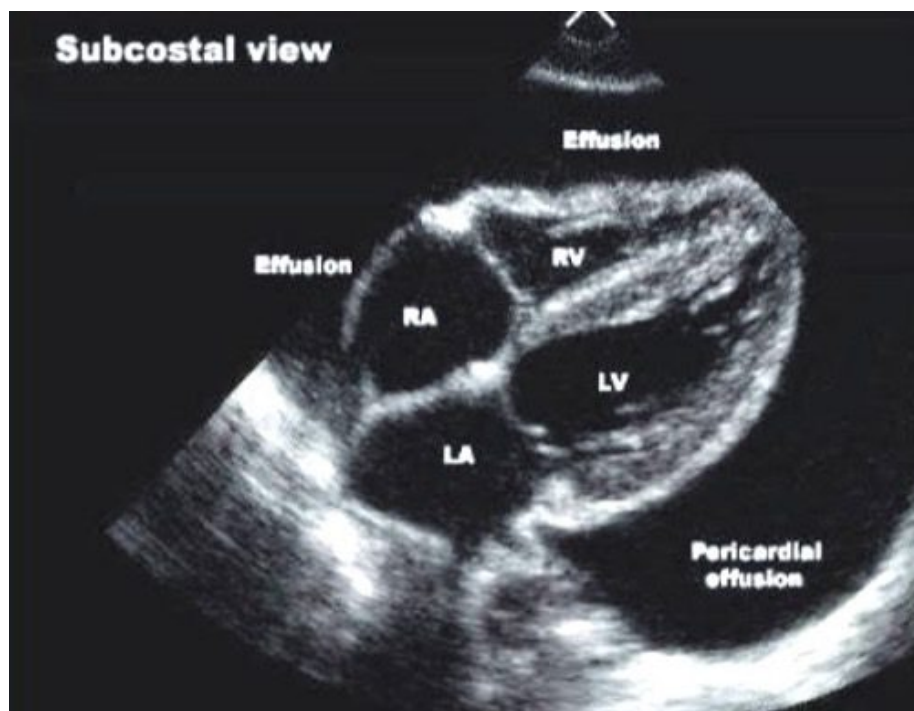
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Echocardiogram?

- An echocardiogram - an echo - is an ultrasound test of the heart. A small probe slides over the skin with a layer of gel, sends sound waves into the chest, and listens for the echoes that come back.
- A computer turns those echoes into a moving picture of the heart on a screen, so the team can see the chambers, the walls, the valves, and the sac around the heart.
- Echo uses sound, not x-rays. There is no radiation. There is no needle or IV for a standard echo on the chest.
- The test usually takes 30 to 45 minutes. You lie on your left side or your back, the room is dimly lit, and the sonographer asks you to take and hold deep breaths now and then.
- You may hear swooshing sounds from the speaker - that is the blood moving through your valves, made audible by the Doppler.
- Most echoes are done in an outpatient lab. You can drive yourself home from a standard TTE and go back to your normal day right after.



A real echo image (subcostal view) with the chambers labeled (LV, RV, LA, RA) plus a pericardial effusion. This is the kind of view the team captures and reads - and the kind of abbreviations you will see on your report.



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Echo Modalities Side by Side

Type	How it is done	When it is used
TTE (standard)	Probe on the chest with gel; no IV; 30 to 45 minutes	First test for almost every heart question - pumping, valves, pericardium
TEE	Light sedation; thin probe in the food pipe; NPO 4-6 hours; ride home	Close-up of valves, looking for a clot in the left atrium, image guide for procedures
Stress echo	Echo before + right after treadmill or dobutamine; about 60 minutes	Chest pain or shortness of breath with exertion; assessing blood-flow problems
Contrast echo	Microbubble liquid through an IV; bubbles dissolve in minutes	When the LV walls are hard to see; looking for a clot in the LV



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What 'Diastolic Function' Means on Your Report

- After the LV squeezes (systole), it has to relax and fill back up (diastole). The echo measures how well it does that.
- Two Doppler measurements are the most important: E/A ratio (early vs late filling) and E/e' ratio (filling vs how fast the wall relaxes).
- A normal pattern means the LV relaxes easily and fills with low pressure.
- Grade I (impaired relaxation) is the mildest. It is common with aging and high blood pressure, and usually does not need treatment by itself.
- Grade II (pseudonormal) and Grade III (restrictive) suggest higher filling pressures and are more closely tied to heart failure with preserved or reduced LVEF.
- Diastolic function is the patient-facing translation of much of what we treat in HFpEF and stiff-heart conditions.



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Why It Matters

- An echo is the workhorse test in heart care. It is how we measure pumping (LVEF), filling pressures, valve disease, the right side of the heart, and the sac around the heart.
- An echo is often the first test ordered for shortness of breath, leg swelling, a new murmur, palpitations, fainting, or a known heart condition that needs monitoring.
- Most echoes are normal. When an echo is abnormal, the team uses the numbers and the pictures to choose the right next step - more medicines, a stress test, a heart catheterization, a CT, or an MRI.
- An echo can be repeated as often as needed. There is no radiation, no IV for a standard study, and no long recovery. We use that to follow conditions like heart failure, valve disease, and cancer treatments that can affect the heart.
- An echo also tells us when NOT to worry - when symptoms turn out not to be coming from the heart - which is sometimes the most useful answer of all.

The Four Kinds of Echo You May Be Scheduled For

TTE	TEE	Stress echo	Contrast (UEA)
<i>Standard echo: probe on the chest</i>	<i>Probe in the food pipe (sedated)</i>	<i>Echo before + after exercise or medicine</i>	<i>Microbubbles in the IV brighten the LV</i>
• No IV • No fasting • 30 to 45 min • Same-day result review	• NPO 4 to 6 hr • Light sedation • Need a ride home • Closer view of valves	• Treadmill or dobutamine • Looks for blood-flow problems • About 60 min total • Walking shoes if treadmill	• Saline (bubble study) • or Definity / Lumason • NOT iodine dye • Improves LVEF accuracy

The four kinds of echo. Most patients get a standard TTE. TEE, stress, and contrast echo are added when a specific question needs more detail.



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LVEF Tiers - the Pumping Number on Your Report (ASE 2015)

Normal (55 to 70%) • The LV pumps out a normal share of its blood with each beat • Most healthy adults • Symptoms point elsewhere if the LVEF is here • Usually no follow-up echo just for the LVEF	Mildly reduced (41 to 50%) • A small drop in pumping • Often early heart failure - sometimes after a heart attack • Heart-protective medicines may be started • Repeat echo in 3 to 12 months to see if it improves	Moderately reduced (31 to 40%) • A clearly low pumping number - HFrEF range • Full guideline-directed heart-failure medicines • Cardiac rehab and lifestyle work • Follow-up echo every 6 to 12 months	Severely reduced (30% or less) • A weak pump that needs careful care • Maximum heart-failure medicines + a defibrillator (ICD) for some • Cardiology + a heart-failure team • Many still improve - sometimes a lot
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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
Reasons your doctor may order an echo	Shortness of breath, leg swelling, chest pain, a new heart murmur, palpitations, fainting, before or after chemotherapy, follow-up of known heart disease, or stroke workup.
Difficult chest wall windows	Some patients have body shapes (large chest, lung disease) that make the standard pictures hard to see. The team may use microbubble contrast to brighten the LV.
Implantable devices	A pacemaker, defibrillator, or surgical wires can cause echo shadows. The team works around them, and may add a TEE or a cardiac MRI when more detail is needed.
Reasons to choose TEE over TTE	A close look at the valves before surgery, looking for a clot in the left atrium before cardioversion or ablation, sorting out a possible source of a stroke, or imaging during certain heart procedures.
Reasons to add a stress echo	Chest pain or shortness of breath with exertion when a regular echo is normal at rest. The stress test asks whether the heart still works well when it is asked to work hard.
Reasons to add microbubble contrast	When the LV walls are hard to see on the resting TTE - which can make a measured LVEF unreliable. Contrast also helps look for clots in the LV after a heart attack.



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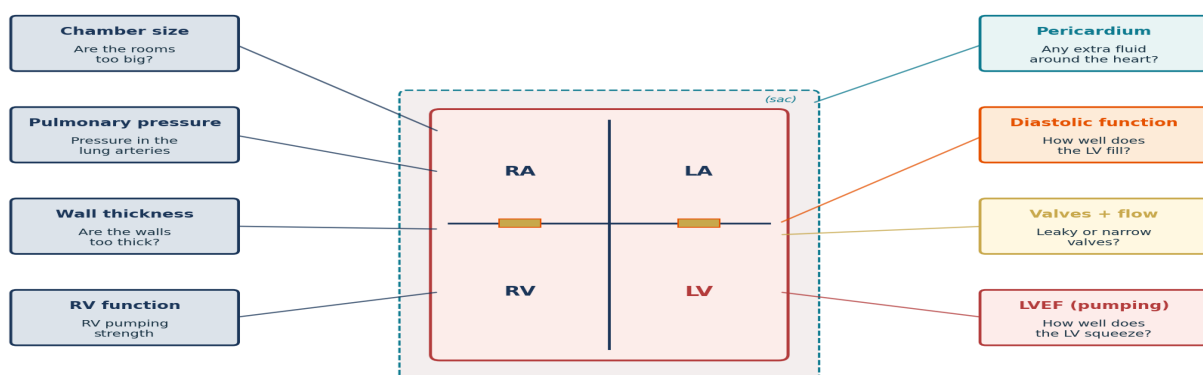


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Treatment Options

- For a standard TTE: no fasting and no special prep. Wear a two-piece outfit. Take your usual medicines as usual unless told otherwise.
- For a TEE: nothing to eat or drink for 4 to 6 hours before. Plan for a ride home and a quiet rest of the day. The sedation will keep you relaxed and the probe in the food pipe is well tolerated.
- For a stress echo: wear walking shoes if a treadmill is planned. Some heart medicines may be held the day of - the team will tell you which. The exercise part is brief but works the heart hard.
- For a contrast echo: a small IV is placed before the study. The microbubble liquid is given in small amounts as needed during the scan. The bubbles dissolve and leave the body in minutes through normal breathing.
- During the test, the sonographer dims the lights and uses warm gel. You may lie on your left side. You will be asked to take a deep breath and hold it for the best heart views.
- After a standard TTE you can go right back to normal activity. After a TEE you should not drive, drink alcohol, or sign important papers for the rest of the day.
- Your results are usually available within a day or two through MyChart. The cardiologist who reads the study writes a report that goes to your ordering doctor and into your record.

What the Echo Team Measures — the Words on Your Report



The echo team measures eight main things. These are the words you will see on the conclusion of your report.

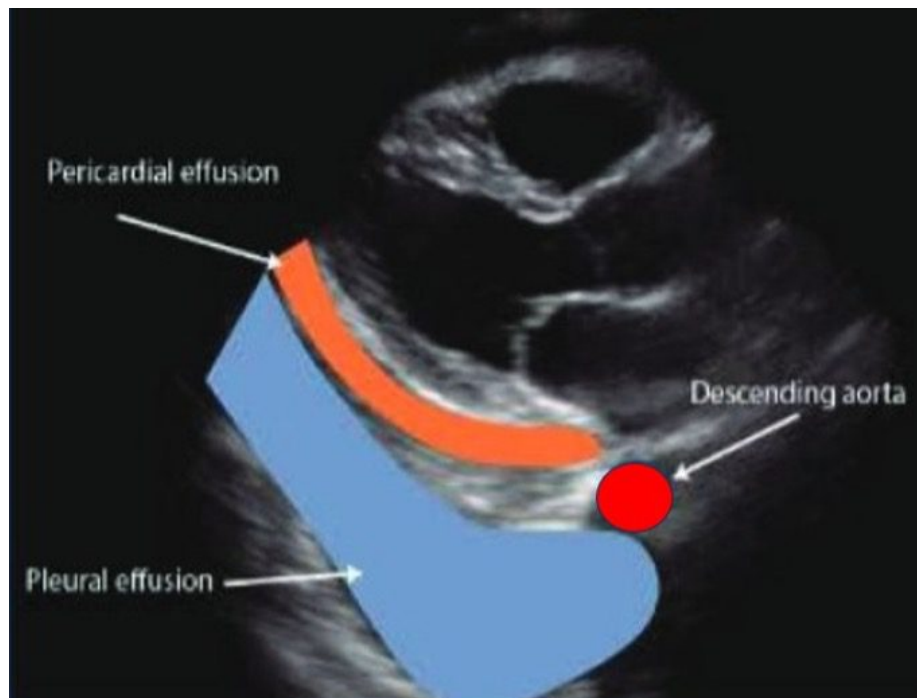


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An echo can also tell the difference between fluid AROUND the heart (pericardial effusion, orange) and fluid in the lung lining (pleural effusion, blue) - using the descending aorta as the landmark. This is the kind of question an echo answers at the bedside.



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11 of 31 | Page



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What Happens During a Standard TTE - Minute by Minute

- Check in: name, date of birth, the test ordered, and a quick review of your medical history.
- Change into a gown that opens in the front. The sonographer will explain everything before starting.
- Lie on your left side on a padded table. The lights are dimmed so the screen is easier to read.
- Three small sticky pads (ECG leads) are placed on the chest so the heartbeats can be timed with the pictures.
- Warm gel is placed on the chest. The probe is slid across the skin in different positions to capture standard views.
- The sonographer will ask for several deep breaths held for a few seconds. This brings the heart closer and gives clearer pictures.
- You may hear a swooshing sound from the speaker - that is the Doppler showing the blood moving through the valves.
- After about 30 to 45 minutes the images are saved, the gel is wiped off, and you are done. You can go right back to your day.



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What Happens During a TEE - and Why Sedation Helps

- Plan for nothing to eat or drink for 4 to 6 hours before. Bring a ride home.
- An IV is placed. Light sedation - usually midazolam and fentanyl - is given so the procedure is comfortable.
- A numbing spray is used on the back of the throat. A small bite block protects the teeth.
- The thin echo probe is gently passed through the mouth into the food pipe (esophagus), where it sits close to the back of the heart.
- Heart rhythm, oxygen, and blood pressure are watched the whole time. The probe is moved a small amount to capture standard views.
- Most patients remember very little. The actual recording usually takes 15 to 30 minutes.
- After the test, you rest in recovery for about an hour. Mild throat soreness for a day is common.
- Do not drive, drink alcohol, sign important papers, or care for small children alone for the rest of the day.



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What Happens During a Stress Echo

- Pictures are taken at rest first - this is the reference.
- If you can walk well, you get on a treadmill that slowly speeds up and goes uphill. You go as long as you can or until the team has the information.
- If you cannot walk well, a medicine called dobutamine is given through an IV to make the heart work harder. The heart rate and blood pressure climb the same way they would with exercise.
- Immediately at peak heart rate, pictures are captured again. Then a final set as the heart settles back to rest.
- The team looks for heart walls that move well at rest but stop moving well under stress - this points to a coronary artery that cannot keep up with demand.
- Total time is about 60 minutes. Most patients return to normal the same day.



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What 'Contrast' Means - and Why It Is Not the Same as CT Dye

- Some hearts are harder to image - large chest, lung disease, or surgery scars. Without help, the LV walls can be hazy and the LVEF unreliable.
- Ultrasound contrast - Definity, Lumason, Optison - is a small amount of microbubbles given through an IV. The bubbles brighten the inside of the LV so the walls are sharp.
- These microbubbles are NOT iodine dye. They do not stress the kidneys. They do not affect the thyroid. They are safe in iodine allergy and shellfish allergy.
- The bubbles dissolve and leave the body in a few minutes through normal breathing.
- Allergic reactions are very rare (about 1 in 10,000) and almost always mild. The old FDA black-box warning has been narrowed over the years.
- Microbubble contrast is also used to see or rule out a clot in the LV after a large heart attack.

Reading your report. Most echo reports follow the same five sections: measurements, LV pumping (LVEF), LV filling (diastolic), valves, and right heart + pericardium. The 'Conclusion' at the bottom is the cardiologist's short summary - if you only read one section, read that one. Bring questions to your next visit.



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Risks, Benefits, and Alternatives

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

Option	Risks	Benefits	Alternatives
Transthoracic echo (TTE) vs Transesophageal echo (TEE)	TTE has essentially no risks - just the time and a little gel. TEE has small risks: throat soreness, very rare tear of the esophagus (about 1 in 5,000), and the small risks of sedation.	TTE: the first answer for almost every heart question. TEE: a much closer look at the valves and the left atrium when TTE is not detailed enough - and the standard image guide for some heart procedures.	Cardiac MRI or cardiac CT for select questions; an invasive heart catheterization when accurate pressures are needed.
Stress echo vs other stress tests	Stress echo has very low risk - the same risks as exercise alone for the treadmill version, plus a small chance of dobutamine causing palpitations.	Stress echo can show both blood-flow problems and how the valves and pumping respond under load - all without radiation.	Nuclear stress test (uses a small radiation tracer), stress cardiac MRI, or coronary CT angiography depending on the question and the patient's body habitus.
Microbubble contrast (Definity, Lumason) vs no contrast	Allergic reactions to ultrasound contrast are rare (about 1 in 10,000) and almost always mild. There is no kidney risk and no thyroid risk - this is NOT iodine dye.	Markedly improves the picture when the LV walls are hard to see. Makes the LVEF more accurate, and can show or rule out a clot in the LV after a heart attack.	Repeating the TTE in a different position, or moving on to cardiac MRI for the best pictures of the LV wall and any scar.



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Option	Risks	Benefits	Alternatives
Saline bubble study (PFO study) vs no bubble study	Same as any IV - a small bruise, very rarely a vein irritation. The saline bubbles dissolve in seconds and pass out through the lungs.	The standard way to look for a hole between the upper chambers of the heart (PFO or ASD) - often part of a stroke workup in younger patients.	TEE with a bubble study for higher accuracy; cardiac MRI for select cases.
Repeating an echo vs not repeating	Essentially no risk to repeating. The main cost is time and a small co-pay.	Following heart failure, valve disease, or cancer-treatment heart monitoring over time. Lets us catch a problem early and adjust medicines.	Spacing the echoes farther apart when the disease is stable, or using a different test (BNP blood test, EKG) for in-between checks.



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Valve Regurgitation Grading - the Words on Your Report (ASE 2017)

Grade	What it means	Typical next step
Trace	A whisper of backflow - within the normal range for most valves, especially tricuspid and pulmonic	No treatment; not usually repeated
Mild	A small leak that is not harming the heart	Usually no treatment; sometimes a follow-up echo every few years
Moderate	A clearly visible leak that may be straining the heart over time	Repeat echo every 1-2 years; medicines if symptoms appear
Severe	A large leak that is changing the heart's size or pumping	Cardiology referral; repeat echo every 6-12 months; surgery or TEER (clip) for some



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How to Read Your Echo Report - a Walk Through the Sections

- Header: the date, why the echo was ordered, and the kind of echo (TTE, TEE, stress, contrast).
- Measurements: chamber sizes (LV, LA, RV, RA), wall thickness, and aortic root size. Numbers outside the normal range get a flag.
- LV systolic function: the LVEF percent, written as 'normal', 'mildly', 'moderately', or 'severely' reduced (see the LVEF cards earlier).
- LV diastolic function: 'normal' or 'Grade I, II, or III' - how well the LV relaxes and fills.
- Valves: each valve is rated for stenosis (narrowing) and regurgitation (leak), graded trace / mild / moderate / severe.
- Right heart and pulmonary pressure: RV size and function, PASP (estimated lung-artery pressure).
- Pericardium: any extra fluid (effusion) or thickening.
- Conclusion / Impression: the cardiologist's short summary. If you only read one section, read this one.



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Common Misconceptions

Myth	Reality
Echo uses radiation, like an x-ray or CT.	It does not. An echo uses sound waves only. There is no radiation, which is why echoes can be repeated as often as needed - in pregnancy, in childhood, and to follow heart disease over time.
Echo 'dye' is the same iodine dye used for CT scans.	It is not. The microbubble liquid used in some echoes (Definity, Lumason) is made of tiny gas bubbles in a fatty shell. It does not affect the kidneys, does not affect the thyroid, and is safe even in chronic kidney disease.
A normal echo means my heart is completely fine.	A normal resting echo is reassuring but does not rule out everything. Coronary artery disease, arrhythmias, and some early problems may not show on a single resting study. The team chooses the next test based on your symptoms.
A low LVEF means I will not get better.	Many patients with a low LVEF improve with the right medicines and care - sometimes back to normal. This is especially true for heart failure from heart attacks, alcohol, chemotherapy, and pregnancy. The LVEF is a starting point, not a destiny.
I will be in the loud, tight tube for an echo.	That is an MRI, not an echo. An echo is done with a small probe on the skin in a regular room. You can talk, you can hear the team, and many patients find it relaxing.
A TEE will hurt my throat.	Most patients remember very little of a TEE because of the light sedation. A mildly sore throat for a day after is common. Serious throat injury is very rare (about 1 in 5,000).



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Myth	Reality
The echo can see every blockage in the heart arteries.	It cannot. A resting echo does not look directly at the heart arteries. A stress echo looks for blood-flow problems indirectly - by watching the heart walls under stress. A coronary CT or angiogram is what looks at the arteries themselves.
If the report says 'mild', I do not need to worry at all.	'Mild' is reassuring, and many mild findings (mild MR, mild AR, mild TR, trace pericardial fluid) are common and do not need treatment. But 'mild' findings still belong in the picture your team uses to decide medicines and follow-up timing.

A low LVEF is a starting point, not a destiny. Many patients with a newly low LVEF improve back toward normal with the right medicines and care - especially heart failure from heart attacks, alcohol, chemotherapy, and pregnancy. This is why we repeat the echo on a schedule: to track the improvement and adjust the plan.



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Possible Complications

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

Where / What	What Can Happen
Transthoracic echo (TTE)	Essentially none. A little leftover gel and, occasionally, mild skin redness where the probe pressed - that is it. The test is among the safest in cardiology.
Transesophageal echo (TEE) - throat	A mildly sore throat for a day is common. Severe throat or esophagus injury, including a small tear, is very rare (about 1 in 5,000). The team checks for new throat or chest pain before discharge.
TEE - sedation	Brief slow breathing or low blood pressure from the sedation. The team monitors heart rhythm, oxygen, and blood pressure throughout, with reversal medicines on hand.
Stress echo - exercise	Brief abnormal heart rhythms or a drop in blood pressure can happen during exercise. The team is in the room and stops the test if needed.
Stress echo - dobutamine	Palpitations, headache, brief abnormal rhythms, or a flushed feeling are common and pass quickly. Serious events are rare.
Ultrasound contrast (Definity, Lumason)	Allergic reactions are very rare (about 1 in 10,000). Most are mild - back pain, flushing, or a brief drop in blood pressure that resolves on its own.
IV placement	For contrast or stress studies: bruise or vein irritation at the IV site. Rare.
False reassurance or false alarm	Echoes are very good but not perfect. A normal echo does not rule out every problem (especially coronary disease), and small findings sometimes get more attention than they deserve. We weigh the echo with your symptoms and the rest of your testing.



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How an Echo Report Is Built - Mapping the Words to What They Mean

Date • Indication • Type of echo	Plain-English Translation
Measurements (chamber sizes, wall thickness) <i>LV size, LA volume, septal + posterior wall thickness</i>	LVEF Pumping strength. Normal = 55–70 %.
LV systolic function (the pumping) <i>LVEF % • Normal / Mildly / Moderately / Severely reduced</i>	E/A, E/e' How well the LV relaxes and fills.
LV diastolic function (the filling) <i>E/A • E/e' • LA volume • Normal / Grade I-III</i>	LA volume Enlarged LA = long-term pressure load.
Valves (anatomy + Doppler) <i>Each valve: stenosis or regurgitation - trace / mild / moderate / severe</i>	MR, AR, TR, PR Leaky mitral, aortic, tricuspid, pulmonic.
RV, pulmonary pressure, pericardium <i>RV function • PASP (estimated lung pressure) • Any pericardial fluid</i>	AS, MS Narrowed aortic or mitral valve (stenosis).
Conclusion / Impression (1 to 4 lines)	PASP Pressure in the lung arteries.
	RV function How the right pump is doing.
	Pericardial Sac around heart — any extra fluid?

A stylized echo report. The left side shows the five color-banded sections of every report. The right side is a quick crib sheet for the abbreviations that show up most often.



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Points to Know

If you remember nothing else, remember these key points.

- For a standard echo on the chest: no IV, no fasting, no special prep. Wear a two-piece outfit. The test takes 30 to 45 minutes.
- For a TEE: nothing to eat or drink for 4 to 6 hours before, plan for a ride home, and skip alcohol and important decisions for the rest of the day.
- For a stress echo: wear walking shoes, follow the held-medications list the team gives you, and bring a small snack for after.
- Microbubble contrast (Definity, Lumason) is NOT iodine dye. It is safe in kidney disease, in thyroid disease, and in iodine allergy.
- Your results are usually in MyChart within a day or two. Some findings (a new low LVEF, severe valve disease, a large pericardial effusion) get a same-day call from our office.
- An echo can be repeated as often as needed - there is no radiation. We use that to follow heart failure, valve disease, and cancer-treatment heart safety.
- Echo abbreviations like LVEF, MR, AR, AS, TR, and PASP can look scary on a report. Bring your report to your next visit - we will go through it line by line.
- Tell the scheduler about claustrophobia (echo is open, not a tube), heavy sedation history, sleep apnea (matters for TEE), and any prior reaction to ultrasound contrast.



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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 chest pain or pressure at rest, new shortness of breath at rest, or fainting while waiting for a scheduled echo - call us. Severe or prolonged chest pain - call 911.
- Fast or irregular heartbeat that is new or different from before - call us the same day.
- Sudden weakness, drooping face, or trouble speaking - call 911. (Stroke workup includes an echo, but the emergency comes first.)
- After a TEE: a sore throat that gets worse over a day or two, blood when you cough or vomit, severe belly pain, or a fever over 101 - call us or come to the ED right away. Esophageal injury is rare but serious when it happens.
- After microbubble contrast: rash, hives, wheezing, or swelling of the face or tongue - call 911. These reactions are very rare but possible.
- Questions about your echo report - new words, new numbers, or a result that worries you - call us. The report makes much more sense after a 5-minute conversation.
- If your echo is being used to monitor a chemotherapy or new heart medicine, do not miss the follow-up echo - call us if you cannot make the appointment so we can reschedule.

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An Echo Is One Picture of the Heart - Where to Read Next

- Echo tells us about the structure and pumping of the heart. Other tests look at the arteries, the rhythm, and the tissue in more detail.
- When the LVEF is reduced and there are symptoms: see the [HFrEF guide](#).
- When the LVEF is normal but the heart feels stiff: see the [HFpEF guide](#) and the [Diastolic Dysfunction guide](#).
- When a valve is narrowed (stenosis): see the [Aortic Stenosis guide](#).
- When a valve is leaking (regurgitation): see the [Mitral Regurgitation guide](#), the [Aortic Regurgitation guide](#), or the [Tricuspid Regurgitation guide](#).
- When the sac around the heart shows fluid: see the [Pericardial Effusion guide](#) or the [Pericarditis guide](#).
- When the question is about blood flow under exercise: see the [Stress Testing guide](#).
- When the question is about the heart arteries: see the [Coronary CT Angiography guide](#) and the [Coronary Artery Disease guide](#).
- When the echo is part of a stroke workup: see the [Atrial Fibrillation guide](#).



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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.

- [American Heart Association - Echocardiogram](#) - Plain-language AHA overview of what an echo is, what it shows, and what to expect during the test.
- [Cleveland Clinic - Echocardiogram](#) - Patient-friendly explainer of the four main kinds of echo and how to prepare for each one.
- [Mayo Clinic - Echocardiogram](#) - Symptom-focused overview of when an echo is ordered, preparation, and what the test does and does not show.
- [NHLBI - Echocardiography](#) - Federal NHLBI overview of the different kinds of echo, including stress and fetal echo.
- [MedlinePlus - Echocardiogram](#) - US National Library of Medicine consumer-health page on echo preparation, what to expect, and how the results are used.
- [American Society of Echocardiography - Patient Information](#) - The professional society for echocardiography also keeps a patient-information section that explains common findings.



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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.

- [ASE Guidelines for Performing a Comprehensive Transthoracic Echocardiographic Examination in Adults \(Mitchell et al., J Am Soc Echocardiogr 2019; PMID 30282592\) \[Guideline\]](#)
Primary framework for what a complete adult TTE study looks like - the standard views, what each view shows, and what gets measured. Anchors the 'what your echo team is doing during the study' framing.
- [Recommendations for Cardiac Chamber Quantification by Echocardiography in Adults \(Lang et al., J Am Soc Echocardiogr 2015; PMID 25559473\) \[Guideline\]](#)
Source for the chamber-size, wall-thickness, and ejection-fraction normal ranges used in the LVEF tier card set (normal 55-70%, mildly reduced 41-50%, moderately reduced 31-40%, severely reduced $\leq 30\%$).
- [Recommendations for the Evaluation of Left Ventricular Diastolic Function by Echocardiography: An Update \(Nagueh et al., J Am Soc Echocardiogr / EACVI 2016; PMID 27037982\) \[Guideline\]](#)
Patient-facing translation of E/A ratio, E/e' ratio, LA volume, and tricuspid regurgitation velocity as markers of filling pressure - cross-links to the Diastolic Dysfunction guide.
- [Recommendations for Noninvasive Evaluation of Native Valvular Regurgitation \(Zoghbi et al., J Am Soc Echocardiogr / EACVI 2017; PMID 28314623\) \[Guideline\]](#)
Source of the trace / mild / moderate / severe regurgitation grading framework used in the valve grade-cards. Cross-links to the MR, AR, and TR guides.
- [Guidelines for Performing a Comprehensive Transesophageal Echocardiographic Examination \(Hahn et al., J Am Soc Echocardiogr 2013; PMID 23998692\) \[Guideline\]](#)
Indications, preparation (NPO 4-6 hours, sedation, need for a ride home), and procedural steps for TEE - frames the 'TTE vs TEE' RBA row.
- [Guidelines for the Use of Echocardiography as a Monitor for Therapeutic Intervention in Adults \(Porter et al., J Am Soc Echocardiogr / EACVI 2015; PMID 25307182\) \[Guideline\]](#)
Frames safety profile of ultrasound enhancing agents (Definity, Lumason) - very low risk in modern use, despite an old FDA black box that has been narrowed. Anchors the 'echo dye is not iodine' misconception.
- [Recommendations for Noninvasive Evaluation of Native Valvular Stenosis \(Baumgartner et al., J Am Soc Echocardiogr / EACVI 2017; PMID 28385280\) \[Guideline\]](#)
Quantitative thresholds for aortic, mitral, and tricuspid stenosis grading - cross-links to the Aortic Stenosis guide.
- [American Heart Association - Echocardiogram \(Echo\) \[Patient Education\]](#)
Plain-language overview of what an echo is, what it shows, and what to expect. Used for patient-voice framing only; clinical numbers re-verified against ASE guidelines.
- [Cleveland Clinic - Echocardiogram \[Patient Education\]](#)
Patient-friendly explanation of TTE, TEE, stress echo, and contrast echo. Cross-checked against ASE 2019 TTE guideline.
- [Mayo Clinic - Echocardiogram \[Patient Education\]](#)
Patient-voice symptom descriptions, preparation steps, and modality differences (TTE, TEE, stress, fetal).



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- [NHLBI - Echocardiography](#) [Patient Education]
Federally-sourced overview of echo types, what they show, and the safety profile (no radiation, gel-and-probe).
- [MedlinePlus - Echocardiogram](#) [Patient Education]
US National Library of Medicine consumer-health overview of echocardiogram preparation, what happens during the test, and how to read the results.
- [Speckle-Tracking Echocardiography: A New Approach to Myocardial Function \(Mor-Avi et al., J Am Soc Echocardiogr 2011; PMID 21353637\)](#) [Clinical Concept]
Patient-friendly framing of strain imaging - a newer add-on that catches subtle dysfunction before the EF drops. Anchors the 'what is global longitudinal strain' synonyms entry.
- [Cardiac Imaging Modalities and Appropriate Use Criteria for Echocardiography \(Doherty et al., ACC AUC 2019\)](#) [Guideline]
Frames when an echo is the right test vs CT, MRI, or nuclear - keeps the 'echo is not the only test I need' misconception evidence-based.



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About This Guide

Rias KS Ali, MD FACC | Board Certified in Interventional Cardiology & Cardiovascular Disease

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Reviewer note: Reviewed against the AHA echocardiogram page, the Cleveland Clinic echo overview, and Mayo Clinic's echocardiogram page. Ours adds: a four-modality side-by-side (TTE / TEE / stress / contrast), a schematic-heart-with-callouts diagram naming the eight things the team actually measures, a stylized report layout that maps the abbreviations on your MyChart report to plain English, LVEF tier cards with the ASE 2015 cutoffs, a valve regurgitation grade-card set, and an RBA table that covers TTE vs TEE and bubble-study vs ultrasound contrast (Definity / Lumason).

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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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