Riverside Health

Outpatient Echocardiogram Interpretation

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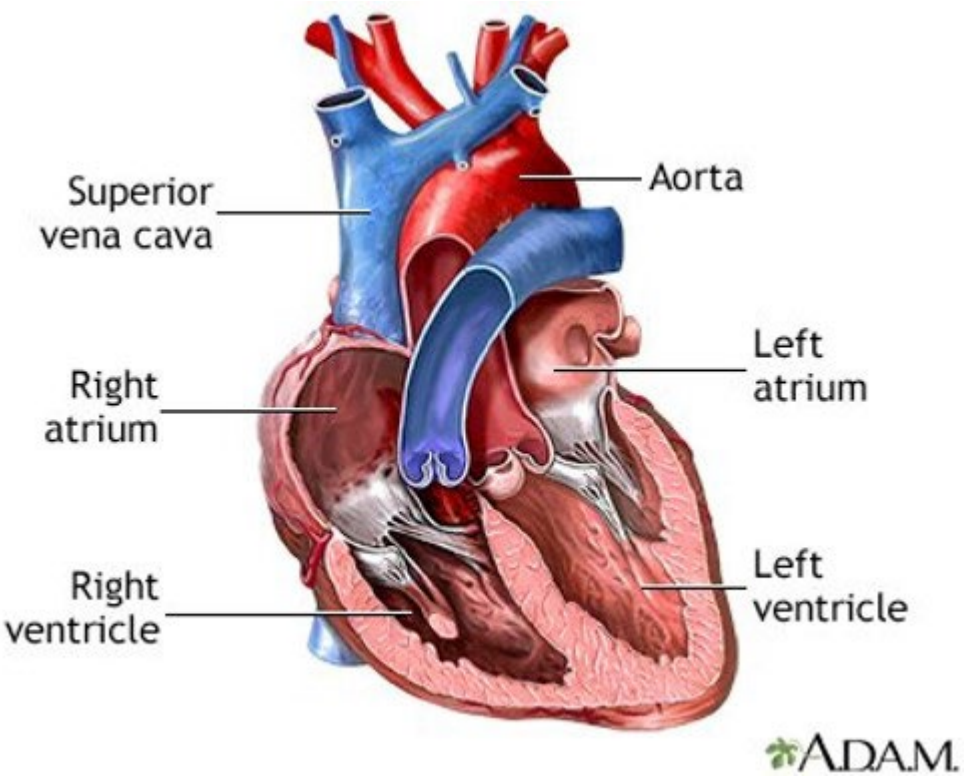
Riverside Structural Cardiology

Learning Objectives

- Identify worrisome valvular abnormalities
- Distinguish between monitoring vs cardiology referral
- Recognize commonly over-referred echo findings
- Understand ascending aortic dilation and pulmonary HTN thresholds

APP Mindset for Echo Interpretation

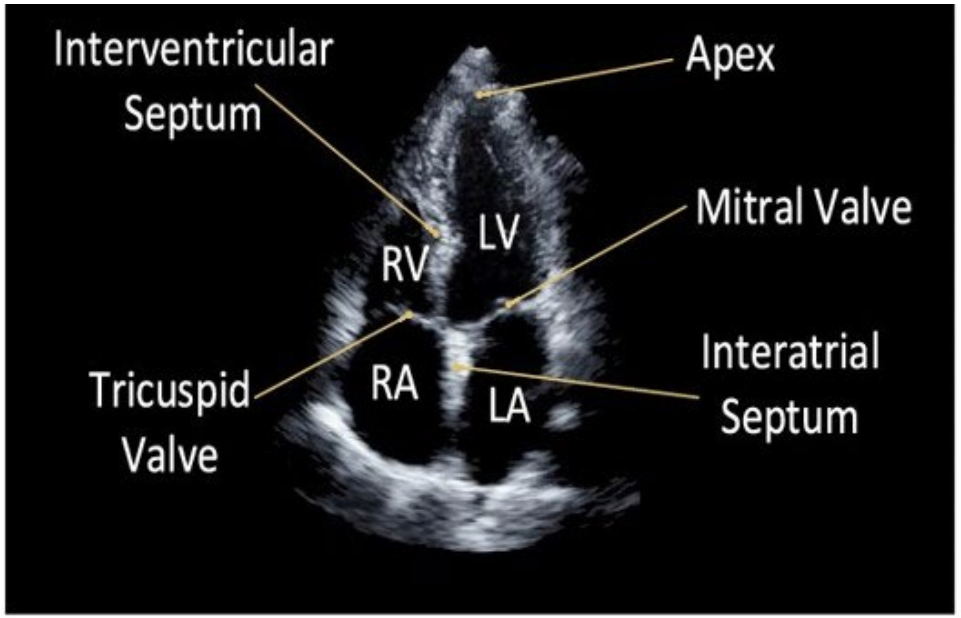


- Start interpretation with:
  - Patient symptoms
  - LV function (EF)
  - Chamber sizes
  - Valve severity
  - Pulmonary pressures
  - Aortic dimensions
- Echo interpretation = risk stratification, not the diagnosis

Normal vs Expected "Abnormal"

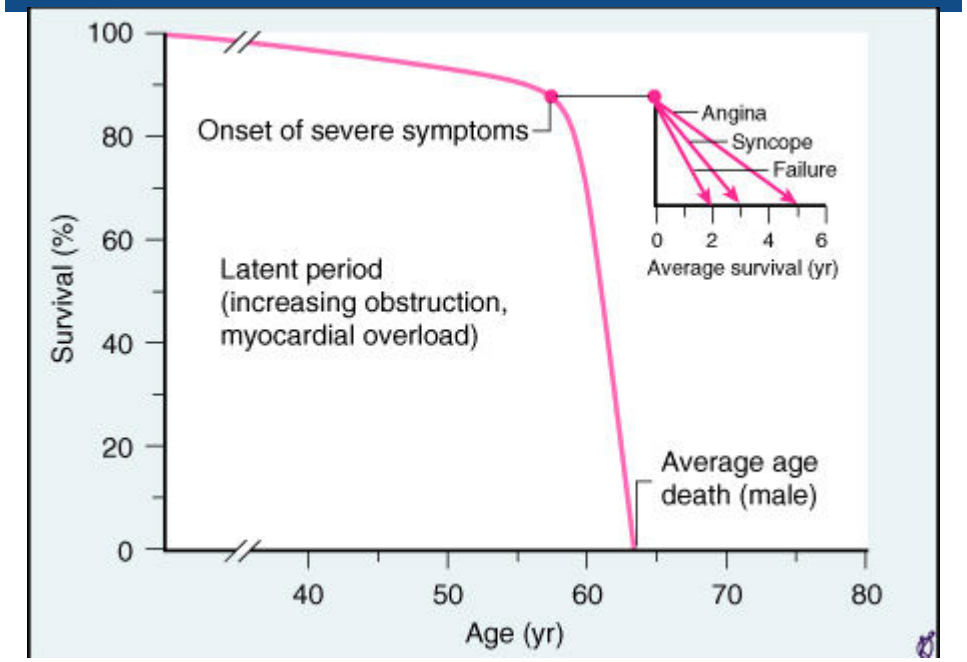
- Most echocardiograms will show **something**
- Trace/Mild regurgitation is a normal physiology
- Aging valve does NOT always mean disease
- "Abnormal" is NOT always clinically significant

Valvular Disease Overview



- What determines significance:
  - Severity (mild vs moderate/severe)
  - Structural response (chambers)
  - Patient symptoms

Aortic Stenosis - High Risk Valve

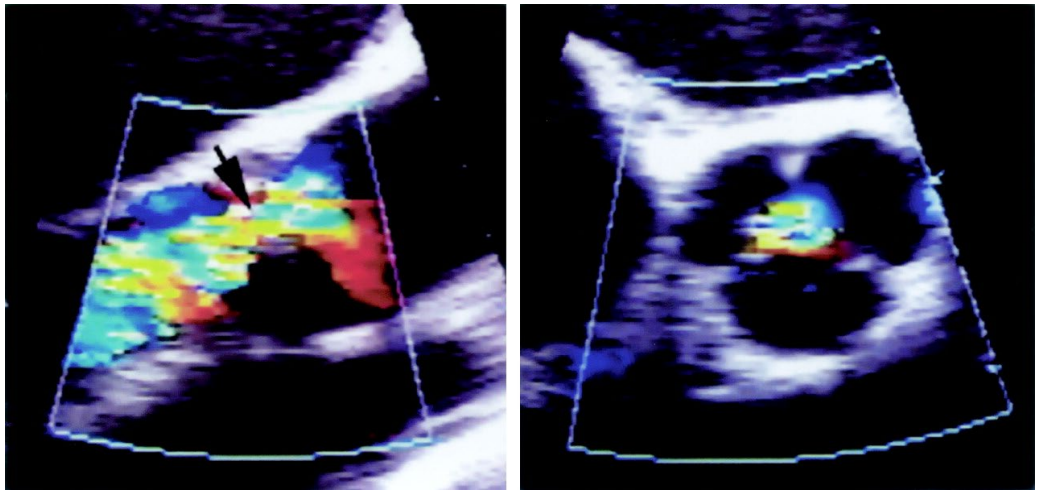


- Predictable progression
  - Sudden symptoms onset
  - Surgical disease, not medical
  - Worrisome Findings (cardiology referral)
    - AVmean gradient >40 mmHg
    - AVA <1.0 cm2
    - AVAindex <0.6
    - DI < 0.28
    - EF < 50%
  - Symptoms/Treatment

Aortic Stenosis Monitoring

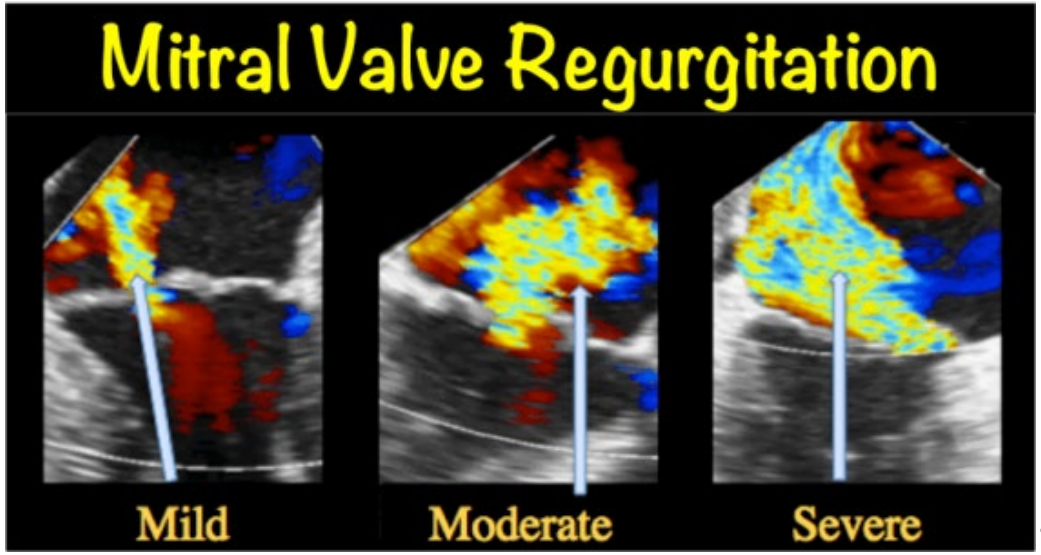
	Mean Gradient	AVA (cm2)	AVA index	DI	Echo
Mild	< 20 mmHg	➢ 1.5	➢ 0.85	➢ 0.5	3-5 yrs
Moderate	20-40 mmHg	1.5-1	0.6-0.85	0.25-0.5	6 m – 1 yr Refer to structural cardiology
Severe	➢ 40 mmHg	< 1	< 0.6	< 0.25	Refer to structural cardiology

Aortic Regurgitation



- Refer If:
  - Moderate to severe regurgitation
  - LV dilation (LVESD >50mm)
  - EF < 55%
  - Symptoms
- Monitor If:
  - Mild regurgitation
  - Normal LV size/function
  - Asymptomatic

Mitral Valve Regurgitation (Common & Misunderstood)



- Worrisome MR:
  - Moderate – Severe
  - LA/LV dilation
  - EF <50% or decreasing EF from previous study
  - Pulmonary HTN
  - Atrial fibrillation
- Continue to monitor
  - Trace/mild MR
  - No chamber enlargement
  - Patient is asymptomatic
- Jet size NOT equal to severity

Mitral Valve Stenosis

- Less common than MR but always significant
- Refer If:
  - Valve area < 1.5 cm2
  - Mean gradient > 5 mmHg
  - Rheumatic disease history
  - Symptoms

Tricuspid Valve Regurgitation

- Most TR is secondary and benign
- When to refer:
  - Moderate to severe TR
  - RV dilation/dysfunction
  - Elevated RVSP
  - Signs of right sided heart failure
- Continue to monitor:
  - Trace/mild TR
  - Normal RV
  - Normal pulmonary pressures

Systolic Heart Failure – Echo Findings

- LVEF < 40% (40-50% mid-range heart failure)
- Global hypokinesis – wall motion abnormalities
- Dilated LV
- Mitral regurgitation – moderate/severe
- Elevated filling pressures

- Actions:
  - Refer new heart failure to cardiology
  - Start GDMT

Commonly Over Referred Echo Findings

- Trace valvular regurgitation
- Mild valve thickening without gradients
- Mitral annular calcification (no stenosis)
- Isolated mitral valve prolapse without MR
- Aortic valve sclerosis (no stenosis)
- Diastolic dysfunction with NYHA class I or II symptoms
- Reassure + repeat echo

Findings That SHOULD Trigger Referral

- Moderate to severe valve disease
- EF < 50%
- Chamber enlargement + valvular abnormality
- Pulmonary hypertension
- Symptoms + structural abnormality

Ascending Aortic Dilation

Size	Action
➢ 4.0 cm	Normal/Monitor
4.0-4.4 cm	Monitor – CTA q 12 m
➢ 4.5 cm	Refer to cardiology
➢ 5.0-5.5	CV surgery referral

- Also refer if:
  - Rapid growth
  - Genetic syndrome/Family history
  - Bicuspid valve

Pulmonary Hypertension

- Red Flags on Echo:
  - RVSP > 40 mmHg
  - RV dilation/dysfunction
  - Septal flattening
  - Symptoms
- When to refer:
  - RVSP persistently > 40-50 mmHg
  - Persistent symptoms
  - RV structural changes
- Echo screens – right heart cath confirms

Key Take Home Message

- Severity + structure + symptoms drive referral
- Mild valvular disease does not require cardiology referral
- EF <40% and aorta >4.5 cm matter
- Confident interpretation of echo findings improves:
  - Patient understanding
  - Referral quality
  - Healthy system efficiency

References

- Heidenreich, P., etc. (2022). 2022 AHA/ACC/HFSA Guideline for the Management of Heart Failure: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. *AHA/ASA Journals.* Retrieved from https://www.ahajournals.org/doi/10.1161/CIR.0000000000001063
- Isselbacher, E., etc. (2022). 2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease: A Report of the American Heart Association/American College of Cardiology Joint Committee on Clinical Practice Guidelines. *AHA/ASA Journals.* Retrieved from https://www.ahajournals.org/doi/10.1161/CIR.0000000000001106
- Otto, C., etc. (2020). 2020 ACC/AHA Guideline for the Management of Patients With Valvular Heart Disease: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. *AHA/ASA Journals*. Retrieved from https://www.ahajournals.org/doi/10.1161/CIR.0000000000000923
- Rajagopal, S., etc. (2023). Evaluation and Management of Pulmonary Hypertension in Noncardiac Surgery: A Scientific Statement From the American Heart Association. *AHA/ASA Journals.* Retrieved from https://www.ahajournals.org/doi/10.1161/CIR.0000000000001136