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NHS England

Valve Follow Up and Surveillance

A summary guide to valve clinic outcomes, follow-up categorisation and echocardiographic surveillance intervals

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About this guide

Effective follow-up of patients with valvular heart disease requires a consistent, evidence-based framework to guide clinical decision-making.

The growing demand on valve clinics and echocardiography services requires clear prioritisation of outcomes and surveillance intervals based on valve severity, haemodynamic status and clinical context.

This guide supports clinicians, sonographers and service managers in applying a standardised approach to valve clinic outcomes and echocardiographic surveillance. It should be used alongside clinical judgement, local operational pathways, and current BSE and ESC valvular heart disease guidelines.

Links to supporting resources

- British Society of Echocardiography: Valve disease assessment
- British Society of Echocardiography: Clinical indications and triage of echocardiography
- ESC/EACTS Guidelines on the management of valvular heart disease

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Valve Clinic Outcomes – Triage tiers

Valve clinic outcome categories

All echocardiogram results with valvular findings are categorised using a four-tier RAG system to direct timely and appropriate clinical follow-up.

URGENT RED **Admit via A&E** **Immediately**	• Symptomatic +/- significant valvular pathology requiring immediate admission • Escalate to Cardiology Consultant / Cardiology SpR
RED **Face to face** **Within 2 weeks**	• Symptomatic patients not requiring admission • Severe valvular disease not requiring admission • Borderline valvular severe disease not requiring admission • Mixed moderate valve disease where severity has increased from previous scan
AMBER **Face to face** **Within 6 weeks**	• Moderate valvular disease • Mixed moderate valve disease where severity has **not** increased from previous scan
GREEN **Virtual review** **Within 6 weeks**	• Pure aortic root assessment • Normal functioning repair, TAVI, mechanical and prosthetic valve replacements with stable parameters • Tricuspid regurgitation in asymptomatic patients

Note: Parameters of concern or discrepancies with Doppler data / 2D images = Echo MDT

Valve Clinic Outcomes – Urgent Red

Clinical presentations:

- Acute decompensated heart failure.
- Haemodynamically unstable patient.
- Symptomatic severe aortic stenosis, aortic regurgitation, mitral regurgitation or mitral stenosis requiring emergency assessment or intervention.
- Suspected acute prosthetic valve dysfunction or endocarditis with haemodynamic compromise.

Escalation process:

- Direct telephone contact with on-call cardiology team - echo text response alone is not sufficient.
- Escalate immediately to Cardiology consultant or Cardiology SpR.
- Document escalation in the patient record.
- If patient is already an inpatient, also inform the clinical team looking after them.
- Communicate echo parameters and immediate clinical concerns verbally at time of escalation.

Note: The on-call cardiology team should be contacted directly by telephone for all Urgent Red results.

- Documentation of escalation should be made in the patient record.
- If the patient is already an inpatient, the clinical team looking after the patient should also be informed.
- Echo parameters and any immediate clinical concerns should be communicated verbally at the time of escalation.

Key principles

Clinical:

- This guide should be used alongside clinical judgement and local operational pathways.
- Categories apply to echocardiographic findings. Clinical presentation may require escalation beyond the echo-based triage category at the discretion of the reporting clinician.
- Patients presenting with red flags at any severity level should receive urgent cardiology input, regardless of grade.
- Echo surveillance intervals apply to asymptomatic patients - onset of symptoms is a red flag requiring urgent re-assessment and upgrade of clinical priority.
- Parameters of concern or discrepancies between Doppler data and 2D images should always be referred to Echo MDT.

Referral:

- Cardiology referral is not indicated when valve intervention is highly unlikely to alter prognosis or quality of life e.g. terminal illness or significant frailty.

Governance:

- Escalation pathways should be agreed locally and reviewed regularly as part of departmental governance.

Escalation Process and Standard Text Responses

Urgent Red - requiring escalation to the on-call team

"This report has been escalated to the on-call for cardiology for urgent review and will be actioned accordingly. The findings of this investigation meet the departmental guidelines for urgent admission."

Red - requiring urgent outpatient cardiology escalation

"The findings of this investigation meet the departmental guidelines for urgent OP cardiology review. Please be reassured a cardiologist will be informed and appropriate follow-up will be arranged."

Amber - requiring non-urgent cardiology review

"The findings of this investigation meet the departmental guidelines for non-urgent cardiology review. Please be reassured a cardiologist will be informed and appropriate follow-up will be arranged."

Green – requiring no additional action

"Cardiology review is not required. In the presence of symptoms, this result is very reassuring. Please reassure the patient."

Escalation principles

All text responses should be documented in the echocardiography report and the patient record.

For **Red** category results, the reporting clinician or echo team should ensure the referring clinician is directly informed where possible.

Urgent red results require direct telephone contact with the on-call cardiology team. The echo text response alone is not sufficient.

Escalation pathways should be agreed locally and reviewed regularly as part of departmental governance.

Text-only responses

Depending on the clinical urgency, echocardiogram results will be categorised and the appropriate standard text response added to the report to inform referrers and support prompt action.

Aortic Stenosis (AS), Bicuspid Aortic Valve

Aortic Stenosis

Severe: Urgent cardiology input
Echo interval: 6 months if asymptomatic

Moderate: Routine cardiology input
Echo interval: 12 months if asymptomatic

Mild: Cardiology input if bicuspid valve, post-inflammatory process, or previous radiotherapy
Echo interval: 3 years if clinically indicated

Red Flags (urgent cardiology input)

Symptoms:
- Breathlessness; chest pain or heart failure
- Presyncope; syncope: consider admission
- Consider advanced imaging if symptomatic with moderate disease

Impaired LV:
- New LV dysfunction (LVEF <55% without other cause)
- Reducing LVEF on sequential scans (where EF falling < 60%)

Aortic root dimensions for surgery:
- Ao root ≥45mm if undergoing AV replacement or Marfan syndrome
- Ao root ≥50mm if risk factors (bicuspid AV, resistant HTN, rate of growth >0.3cm/yr, desire for pregnancy, aortic coarctation)
- Ao root ≥55mm if tricuspid AV

Bicuspid Aortic Valve

Cardiology referral is recommended for all patients.

No AS, at most mild AR
Echo interval: 3 years

Valve thickening with mild AS
Echo interval: 2 years

Aortopathy individualised approach
Echo interval: 12 months default; cross-sectional imaging may be preferred

Note: Cardiology referral is not indicated when valve intervention is highly unlikely to alter prognosis or quality of life (e.g. terminal illness, significant frailty).

Aortic Regurgitation (AR), Mitral Regurgitation (MR)

Aortic Regurgitation

Severe: Urgent cardiology input
Echo interval: 6-12 months if asymptomatic

Moderate: Routine cardiology input
Echo interval: 12 months if asymptomatic

Mild: Cardiology input if aortic root ≥40mm or valve abnormal
Echo interval: None if normal valve and root <40mm; 3-5 years for AR; individualised approach for aortic root

Red flags (urgent cardiology input)

Symptoms:
- Consider advanced imaging if symptomatic with moderate disease

Left ventricular size and systolic function
- LV dilatation or LV impairment (LVEF <55% without other cause)
- Increase in LV size or decrease in systolic function but remaining within normal limits

Aortic dimensions as per AS section

Mitral Regurgitation

Severe: Urgent cardiology input
Echo interval: 6 months if asymptomatic

Moderate: Routine cardiology input
Echo interval: 12 months if asymptomatic

Mild: Cardiology input if valve structurally abnormal
Echo interval: 3-5 years only if anatomically abnormal valve

Red flags (urgent cardiology input)

Symptoms:
- Consider TOE if symptomatic with moderate disease

Left heart
- LV dilatation
- LVEF <60%

Right heart
- SPAP >50mmHg

Heart rhythm
- New onset atrial fibrillation

Note: Cardiology referral is not indicated when valve intervention is highly unlikely to alter prognosis or quality of life (e.g. terminal illness, significant frailty).

Mitral Stenosis (MS)

Mitral Stenosis

Severe: Urgent cardiology input

Echo interval: 6-12 months if asymptomatic

Moderate: Routine cardiology input

Echo interval: 12 months if asymptomatic

Mild: Cardiology input if rheumatic/inflammatory/radiotherapy or congenital abnormality

Echo interval: 3-5 years or sooner if symptoms develop

Red flags: Urgent cardiology input

Symptoms

- Consider TOE if symptomatic with moderate disease

Right heart

- SPAP >50mmHg
- RV impairment or dilatation

Heart rhythm

- New onset atrial fibrillation

Stroke risk

- Confirmed TIA or stroke
- Dense spontaneous echo contrast in LA

Note: Cardiology referral is not indicated when valve intervention is highly unlikely to alter prognosis or quality of life (e.g. terminal illness, significant frailty).

Right-Sided Valve Disease

Tricuspid regurgitation (TR)

Severe: Urgent cardiology input

Echo interval: 6-12 months if asymptomatic

Moderate: Routine cardiology input if anatomically abnormal valve, RA RV impairment / dilation, TR caused by RV pacing lead

Echo interval: 12 months

Mild: Cardiology input if valve structurally abnormal, RV impairment/ dilation

Echo interval: None if normal valve anatomy and RV size and function; otherwise 3-5 years

Pulmonary regurgitation (PR)

Severe: Urgent cardiology input

Echo interval: 12 months if asymptomatic

Moderate: Cardiology input if anatomically abnormal valve, PA RV impairment / dilation, previous valvuloplasty

Echo interval: 12-24 months if asymptomatic

Mild: Usually normal finding

Echo interval: None; refer if anatomically abnormal valve

Pulmonary stenosis (PS)

Severe: Urgent cardiology input

Echo interval: 12 months if asymptomatic

Moderate: Typically congenitally abnormal valve. Refer for cardiology input.

Echo interval:12–24 months if asymptomatic

Mild: Typically congenitally abnormal valve. Refer for cardiology input.

Echo interval: 3-5 years

Red flags (urgent cardiology input):

Symptoms

Right heart

- RV dilatation
- RV impairment
- Elevated PASP

Note: Cardiology referral is not indicated when valve intervention is highly unlikely to alter prognosis or quality of life (e.g. terminal illness, significant frailty).

Valve Replacement and Repair – Surveillance

Mechanical valve replacement

- Baseline echo: 6-8 weeks post-operation
- No routine surveillance if baseline TTE normal and no alerts

Bioprosthetic valve replacement

- Baseline echo: 6-8 weeks post-operation
- Surveillance: annual echo

TAVI

- Baseline echo: 6-8 weeks post-implant
- Surveillance: Annual if valve parameters stable, may extend to every 2 years

Surgical mitral valve repair

- Baseline echo: 6-8 weeks post-operation
- 1-year post-operative echo
- Residual MR mild or less – repeat every 2-3 years
- Residual MR greater than mild – follow native valve criteria

Transcatheter mitral repair

- Baseline echo: 6-8 weeks post-procedure
- Residual MR mild or less - annual echo.
- Residual MR greater than mild - follow native valve criteria

Aorta surveillance after bicuspid AV surgery

- Individualised approach as cross sectional imaging may be preferred. If discrepancy >2 mm between TTE and CT / MRI - interval scan with CT / MRI.

AVR and root replacement

- Baseline echo: 6-8 weeks post-operation
- Surveillance: according to implanted valve type.

Clinical Alerts and Escalations

Clinical alerts – Requiring urgent cardiology review

- New or worsening prosthetic valve regurgitation: review by native valve criteria and consider TOE
- Gradient or effective orifice area outside expected parameters for the implanted valve type
- Mechanical prosthetic valve where INR has been subtherapeutic for an extended period
- New LV dilatation or systolic function impairment identified on surveillance echocardiogram
- Clinical suspicion of endocarditis +/- high risk features on echo

Aortic root dilatation – Urgent review thresholds

- Marfan syndrome: ≥45mm
- Bicuspid aortic valve: ≥50mm
- Risk factors (resistant HTN, rate of growth >3mm/year, desire for pregnancy, aortic coarctation): ≥50mm
- All other patients: ≥55mm

Discharge from surveillance

- Consider discharge from routine echocardiographic surveillance if the patient would not be considered for re-intervention on account of frailty or significant comorbidities.
- For bioprosthetic valve dysfunction, an individualised approach to surveillance frequency should be adopted.

Echo MDT referral

- Refer to Echo MDT when parameters of concern are identified or when there is a discrepancy between Doppler data and 2D imaging findings.
- Echo MDT should also be considered for complex prosthetic valve cases, cases with ambiguous severity grading, or where further advanced imaging is being contemplated.

Resources and Acknowledgements

- GIRFT Academy resources
- FutureNHS resources
- British Society of Echocardiography: Valve disease assessment
- Model health system metrics
- British Society of Echocardiography: Clinical indications and triage of echocardiography - Heart valve disease

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