

1 Primary disease can be congenital or acquired. Acquired valve degeneration
2 is currently the main cause of heart valve disease, leading to the most
3 common types of calcific aortic stenosis and myxomatous or calcific
4 degeneration of the mitral valve.

5 Secondary heart valve disease can be classified as:

- 6 • ventricular with secondary mitral regurgitation
- 7 • ventricular with secondary tricuspid regurgitation
- 8 • atrial with secondary regurgitation through the mitral and tricuspid valves

9 Among people aged 65 years or over the prevalence of asymptomatic heart
10 valve disease may be more than 50%, while the prevalence of clinically
11 significant heart valve disease is around 11%. It is reported that for people
12 over the age of 65, the prevalence of heart valve disease will increase from
13 1.5 million people currently, to double that in 2046.

14 People with heart valve disease may have no symptoms or may have
15 symptoms specific for the affected valve. Associated heart rhythm problems,
16 such as atrial fibrillation or heart block, may cause palpitations and
17 breathlessness, or dizziness and light-headedness, respectively. Untreated
18 severe disease can lead to valvular heart failure, with symptoms including
19 breathlessness, tiredness and swollen ankles. In the older population heart
20 valves stiffen as part of the ageing process, making dysfunction more likely.
21 We hope that this guideline will raise awareness of heart valve disease and
22 improve diagnosis and management.

23 **Current practice**

- 24 • Heart valve disease can be detected from clinical features, with the
25 diagnosis usually confirmed by an echocardiogram. Further investigations
26 may be needed as part of the management plan. GPs often detect heart
27 murmurs when listening to the chest for other reasons, but not all murmurs
28 indicate a problem. This can make it difficult to determine when to refer
29 someone to secondary care. Valve disease usually worsens over time.

- 1 • Treatment may include medicines to control symptoms, such as
2 angiotensin-converting enzyme (ACE) inhibitors, anti-arrhythmics and
3 anticoagulants. In cases of severe heart valve disease with symptoms,
4 surgery to repair or replace the valve may be needed. This can be either
5 conventional surgery or transcatheter intervention. The timing of any
6 intervention is important to avoid irreversible valvular heart failure but also
7 unnecessary early intervention. Monitoring is continued after heart valve
8 intervention, but there is currently variation in practice.
- 9 • There are areas of uncertainty in the indications for intervention, and in the
10 most appropriate medicines for medical management.

11 **2 Who the guideline is for**

12 This guideline is for:

- 13 • healthcare professionals in all NHS settings
14 • commissioners and providers of services
15 • people using services, their families and carers.

16 NICE guidelines cover health and care in England. Decisions on how they
17 apply in other UK countries are made by ministers in the [Welsh Government](#),
18 [Scottish Government](#), and [Northern Ireland Executive](#).

19 ***Equality considerations***

20 NICE has carried out an equality impact assessment during scoping. The
21 assessment:

- 22 • lists equality issues identified, and how they have been addressed
23 • explains why any groups are excluded from the scope.

24 The guideline will look at inequalities relating to:

- 25 • geographical location for those who do not live close to a valve clinic
26 • people who use intravenous drugs
27 • age
28 • people with dementia

- 1 • people with a learning disability.

2 **3 What the guideline will cover**

3 **3.1 Who is the focus?**

4 **Groups that will be covered**

- 5 • Adults (18 and over) with suspected heart valve disease.
6 • Adults (18 and over) with diagnosed heart valve disease (aortic, mitral,
7 bicuspid and tricuspid).

8 Specific consideration will be given to:

- 9 • pregnant women and women considering pregnancy
10 • people with bicuspid aortic valve disease
11 • people at higher risk from interventions, for example, people with multiple
12 comorbidities (including cardiac comorbidities) or frailty or both.

13 **Groups that will not be covered**

- 14 • People with congenital heart valve disease, except bicuspid aortic valve
15 disease.

16 **3.2 Settings**

17 **Settings that will be covered**

- 18 • All settings where NHS healthcare is provided or commissioned.

19 **3.3 Activities, services or aspects of care**

20 **Key areas that will be covered**

21 We will look at evidence in the areas below when developing the guideline,
22 but it may not be possible to make recommendations in all the areas.

23 Note that guideline recommendations for medicines will normally fall within
24 licensed indications; exceptionally, and only if clearly supported by evidence,
25 use outside a licensed indication may be recommended. The guideline will

1 assume that prescribers will use a medicine's summary of product
2 characteristics to inform decisions made with individual patients.

3 1 Assessment and diagnosis, including cardiac auscultation,
4 echocardiography, stress testing, cardiac magnetic resonance and
5 cardiac CT

6 2 Medical management of aortic regurgitation, aortic stenosis, mitral
7 regurgitation, mitral stenosis and tricuspid regurgitation

8 3 Indications for and timing of interventions (conventional surgery and
9 transcatheter intervention) for aortic regurgitation, aortic stenosis, mitral
10 regurgitation, mitral stenosis and tricuspid regurgitation

11 4 Interventions

12 – Approach (conventional surgery versus transcatheter intervention)

13 – Repair or replacement

14 – Type of prosthesis (mechanical or biological)

15 – Interventions for prosthetic valve degeneration

16 5 Anticoagulation and antiplatelet therapy after intervention

17 6 Monitoring – frequency and type of test before and after intervention

18 7 Information and support

19 **Areas that will not be covered**

20 1 Diagnosis and management of pulmonary valve disease and tricuspid
21 stenosis.

22 2 Prophylaxis for infective endocarditis and management of infective
23 endocarditis.

24 3 Prophylaxis for rheumatic valve disease.

25 4 Management of heart failure, unless there are specific considerations for
26 heart valve disease.

27 5 Anticoagulation for atrial fibrillation.

28 6 Congenital heart valve disease, except bicuspid aortic valve disease.

1 **Related NICE guidance**

2 ***Published***

- 3 • [Chronic heart failure in adults: diagnosis and management](#) (2018) NICE
4 guideline NG106
- 5 • [Sutureless aortic valve replacement for aortic stenosis](#) (2018) NICE
6 interventional procedures guidance IPG624
- 7 • [Aortic valve reconstruction with processed bovine pericardium](#) (2018) NICE
8 interventional procedures guidance IPG604
- 9 • [Atrial fibrillation and heart valve disease: self-monitoring coagulation status
10 using point of care coagulometers \(the CoaguCheck XA system\)](#) (2017)
11 NICE diagnostics guidance DG14
- 12 • [Transcatheter aortic valve implantation for aortic stenosis](#) (2017) NICE
13 interventional procedures guidance IPG586
- 14 • [Prophylaxis against infective endocarditis: antimicrobial prophylaxis against
15 infective endocarditis in adults and children undergoing interventional
16 procedures](#) (2016) NICE guideline CG64
- 17 • [Transapical transcatheter mitral valve-in-valve implantation for a failed
18 surgically implanted mitral valve bioprosthesis](#) (2015) NICE interventional
19 procedures guidance IPG541
- 20 • [Acute heart failure: diagnosis and management](#) (2014) NICE guideline
21 CG187
- 22 • [Transcatheter valve-in-valve implantation for aortic bioprosthetic valve
23 dysfunction](#) (2014) NICE interventional procedures guidance IPG504
- 24 • [Atrial fibrillation: management](#) (2014) NICE guideline CG180 (currently
25 being updated, publication expected September 2020)
- 26 • [Percutaneous pulmonary valve implantation for right ventricular outflow
27 tract dysfunction](#) (2013) NICE interventional procedures guidance IPG436
- 28 • [Transient loss of consciousness \('blackouts'\) in over 16s](#) (2010) NICE
29 guideline CG109
- 30 • [Percutaneous mitral valve annuloplasty](#) (2010) NICE interventional
31 procedures guidance IPG352

- 1 • [Percutaneous mitral valve leaflet repair for mitral regurgitation](#) (2009) NICE
2 interventional procedures guidance IPG309
- 3 • [Endoaortic balloon occlusion for cardiac surgery](#) (2008) NICE interventional
4 procedures guidance IPG261
- 5 • [Thoracoscopically assisted mitral valve surgery](#) (2007) NICE interventional
6 procedures guidance IPG245
- 7 • [Radiofrequency valvotomy for pulmonary atresia](#) (2004) NICE
8 interventional procedures guidance IPG95
- 9 • [Balloon valvuloplasty for aortic valve stenosis in adults and children](#) (2004)
10 NICE interventional procedures guidance IPG78
- 11 • [Balloon dilatation of pulmonary valve stenosis](#) (2004) NICE interventional
12 procedures guidance IPG67

13 ***NICE guidance about the experience of people using NHS services***

14 NICE has produced the following guidance on the experience of people using
15 the NHS. This guideline will not include additional recommendations on these
16 topics unless there are specific issues related to investigation and
17 management of heart valve disease in adults:

- 18 • [Medicines optimisation](#) (2015) NICE guideline NG5
- 19 • [Patient experience in adult NHS services](#) (2012) NICE guideline CG138
- 20 • [Medicines adherence](#) (2009) NICE guideline CG76

21 **3.4 Economic aspects**

22 We will take economic aspects into account when making recommendations.
23 We will develop an economic plan that states for each review question (or key
24 area in the scope) whether economic considerations are relevant, and if so
25 whether this is an area that should be prioritised for economic modelling and
26 analysis. We will review the economic evidence and carry out economic
27 analyses, using an NHS and personal social services (PSS) perspective, as
28 appropriate.

29 **3.5 Key issues and draft questions**

30 1 Assessment and diagnosis

- 1 1.1 In people with suspected heart valve disease, what are the
2 indications for referral for echocardiography?
- 3 1.2 In people with suspected heart valve disease, what symptoms and
4 signs indicate direct referral to a specialist?
- 5 1.3 In people who have had echocardiography, what are the indications
6 for referral to a specialist?
- 7 1.4 In people with heart valve disease, what is the diagnostic accuracy
8 and cost effectiveness of stress testing and stress echocardiography?
- 9 1.5 What is the clinical and cost effectiveness of cardiac magnetic
10 resonance and cardiac CT for assessing known heart valve disease?
- 11 2 Medical management
- 12 2.1 In people with heart failure and heart valve disease, what is the
13 clinical and cost effectiveness of using angiotensin-converting enzyme
14 (ACE) inhibitors, angiotensin II receptor blockers (ARBs), beta-blockers,
15 calcium channel blockers, digoxin and diuretics to improve the
16 symptoms of heart valve disease?
- 17 3 Indications for and timing of interventions
- 18 3.1 What symptoms, signs and findings indicate interventions for people
19 with aortic regurgitation, aortic stenosis, mitral regurgitation, mitral
20 stenosis and tricuspid regurgitation?
- 21 4 Interventions for valve repair or replacement
- 22 4.1 What is the clinical and cost effectiveness of transcatheter
23 intervention or surgery¹ (with mechanical or biological valves) compared
24 with conservative management for people with aortic stenosis, aortic
25 regurgitation, mitral stenosis, mitral regurgitation, isolated tricuspid
26 regurgitation or tricuspid regurgitation with other heart valve disease?
- 27 4.2 What is the clinical and cost effectiveness of repeat valve
28 replacement compared with transcatheter intervention for prosthetic
29 valve degeneration?
- 30 5 Anticoagulation and antiplatelet therapy after intervention

¹ Surgery refers to both standard and minimally invasive surgery throughout.

1 5.1 What is the clinical and cost effectiveness of antithrombotic and
2 antiplatelet therapy for people with prosthetic valves following
3 transcatheter intervention or surgery (mechanical or biological valve)?

4 5.2 What is the clinical and cost effectiveness of bridging agents for
5 people who need to temporarily stop their anticoagulation?

6 6 Monitoring

7 6.1 Where there is no current indication for intervention, what is the most
8 clinically and cost-effective type (for example BNP, or NT-proBNP) and
9 frequency of test for monitoring in people with heart valve disease?

10 6.2 What is the most clinically and cost-effective type and frequency of
11 test for monitoring in people with repaired or replaced heart valves?

12 7 Information and support

13 7.1 What information and advice should people with heart valve disease
14 and their family and carers receive?

15

16 The key issues and draft questions will be used to develop more detailed
17 review questions, which guide the systematic review of the literature.

18 **3.6 Main outcomes**

19 The main outcomes that may be considered when searching for and
20 assessing the evidence are:

21 1 mortality

22 2 health-related quality of life

23 3 hospitalisation

24 4 reintervention

25 5 heart failure

26 6 arrhythmias, for example, atrial fibrillation

27 7 thromboembolic events

1 **4 NICE quality standards and NICE Pathways**

2 **4.1 *NICE quality standards***

3 **NICE quality standards that will use this guideline as an evidence source** 4 **when they are being developed**

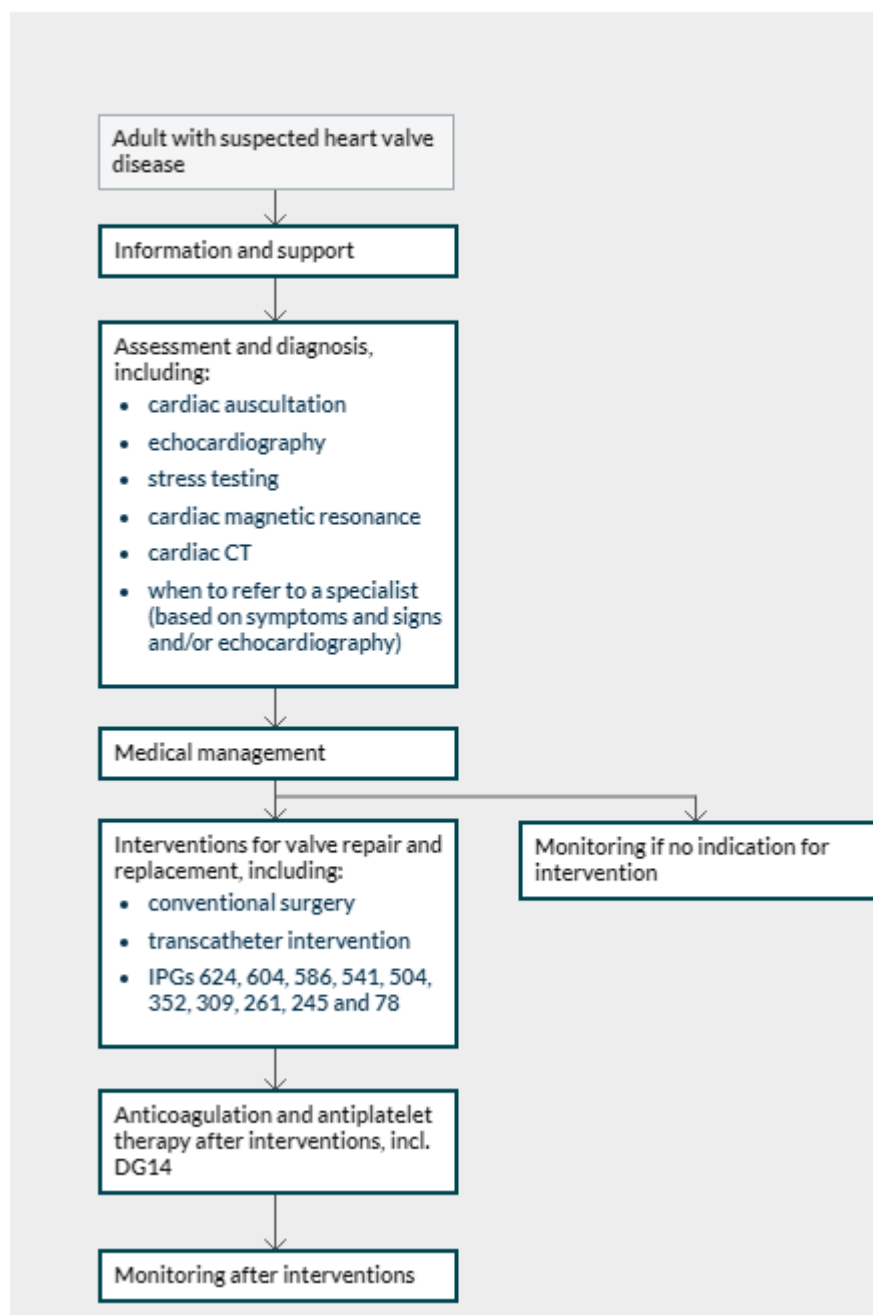
- 5 • Heart valve disease in adults. NICE quality standard. Publication date to be
6 confirmed.

7 **4.2 *NICE Pathways***

8 [NICE Pathways](#) bring together everything we have said on a topic in an
9 interactive flowchart. When this guideline is published, the recommendations
10 will be included in the NICE Pathway on heart valve disease (in development).

11 An outline based on this scope is included below. It will be adapted and more
12 detail added as the recommendations are written during guideline
13 development.

Heart valve disease overview



1

2 5 Further information

This is the draft scope for consultation with registered stakeholders. The consultation dates are 18 February to 18 March 2019.

The guideline is expected to be published in May 2021.

You can follow progress of the [guideline](#).

Our website has information about how [NICE guidelines](#) are developed.

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