K.2 LVEF on cardiac MRI in aortic or mitral regurgitation

K.2.1 Research recommendation

In adults with aortic or mitral regurgitation in whom the need for intervention is unclear after echocardiography, what is the prognostic value and cost effectiveness of left ventricular ejection fraction measured on cardiac MRI to assess the need for intervention?

K.2.1.1 Why this is important

Prognostic parameters that predict symptomatic deterioration, development of heart failure that may not be reversible following valve intervention or mortality inform the need for valve intervention in patients with asymptomatic severe heart valve disease to avoid poor outcome

K.2.1.2 Rationale for research recommendation

Importance to 'patients' or the population	To provide an appropriate or better alternative than echocardiography which will lead to a reduction in adverse events due to delayed intervention
Relevance to NICE guidance	Evidence for this prognostic factor may support specific recommendations on the prognostic

	value of left ventricular ejection fraction measured on cardiac MRI in these populations
Relevance to the NHS	The introduction of cardiac MRI for those in whom the need for intervention is unclear after echocardiography may lead to significant increase in cost that, however, may be balanced by the benefit of accuracy and avoidance of adverse events due to delayed intervention.
National priorities	"Action on prevention" long term plan
Current evidence base	No evidence was identified for this prognostic factor in these populations.
Equality considerations	None identified

K.2.1.3 Modified PICO table

Population	Inclusion Adults aged 18 years and over with diagnosed heart valve disease requiring further tests after echocardiography to determine whether intervention is needed. It should be clear that the population represented is those in whom there was uncertainty about whether intervention was indicated Data will be stratified by the type of heart valve disease as follows: • aortic [including bicuspid] regurgitation • primary mitral regurgitation • secondary mitral regurgitation Exclusion • Children (aged <18 years) • Adults with congenital heart disease (excluding bicuspid aortic valves). • Adults with previous intervention for HVD (surgical or transcatheter).
Prognostic variables	Left ventricular ejection fraction measured on cardiac MRI
Outcome	Indication for intervention based on prognosis for the following without intervention: • Mortality (1 and 5 years) • Hospital admission for heart failure or unplanned intervention (1 and 5 years) • Reduced cardiac function (echo parameters – LVEF) 1 and 5 years • Symptom onset or symptom worsening (e.g. that led to surgery being required) 1 and 5 years Indication for intervention based on predictors of the following post-operative outcomes: • Mortality (6 and 12 months)

	• Hospital admission for heart failure (6 and 12 months) • Reduced cardiac function (echo or cardiac MRI parameters – for example LVEF <50%) (6 and 12 months) • Return to normal LV volumes post-operatively based on echo or cardiac MRI as defined in the study (6 and 12 months) • >20% reduction in LV volume post-operatively based on echo or cardiac MRI (6 and 12 months)
Study design	Cohort study adjusted for all key confounders
Timeframe	Long term
Additional information	None