

Medical Policy



Title: Cardiovascular Magnetic Resonance (CMR)

Professional

Original Effective Date: August 4, 2005
 Revision Date(s): February 27, 2006,
 May 2, 2007; November 1, 2007;
 January 1, 2010; February 15, 2013;
 December 11, 2013; April 15, 2014
 July 15, 2014; June 10, 2015;
 June 8, 2016; October 1, 2016;
 May 10, 2017; April 25, 2018;
 October 1, 2018
 Current Effective Date: July 15, 2014

Institutional

Original Effective Date: July 1, 2006
 Revision Date(s): May 2, 2007;
 November 1, 2007; January 1, 2010;
 February 15, 2013; December 11, 2013;
 April 15, 2014; July 15, 2014;
 June 10, 2015; June 8, 2016;
 October 1, 2016; May 10, 2017;
 April 25, 2018; October 1, 2018
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DESCRIPTION

Cardiovascular magnetic resonance (CMR) is established in clinical practice for the diagnosis and management of disorders of the cardiovascular system.

CMR has several advantages over other imaging modalities:

- Non-invasive
- No ionizing radiation

- No known clinical side effects
- Soft tissue imaging is superior
- No imaging artifact from bone
- Equal clarity in any view: axial, sagittal, coronal, or oblique
- Ability to acquire two, three, and four-dimensional data

Disadvantages of CMR include:

- Requires more patient cooperation
- Longer imaging times
- Incompatibility with various medical and life support devices
- Attraction of ferromagnetic objects
- Cost (When applied appropriately with state of the art MRI technology and expertise, initial test cost may be offset by a reduction in downstream utilization of other redundant imaging tests. CMR has the potential to provide a comprehensive examination in one setting at considerably less risk and cost to the patient.)

POLICY

A. **Medically necessary** indications for CMR include:

1. Congenital heart disease
 - a. Assessment of shunt size
 - b. Situs anomalies with complex congenital heart disease
 - c. Anomalous pulmonary venous return, especially in complex anomalies and cor triatriatum
 - d. Anomalous systemic venous return
 - e. Systemic or pulmonary venous obstruction
 - f. Ventricular Septal Defect (VSD) associated with complex anomalies
 - g. Supracristal VSD
 - h. Evaluation of right and left ventricular volumes, mass and function
 - i. Pulmonary regurgitation
 - j. Supravalvular aortic stenosis
 - k. Post-operative follow-up of shunts
 - l. Aortic (sinus Valsalva) aneurysm
 - m. Aortic coarctation
 - n. Vascular rings
 - o. Aortopulmonary window
 - p. Anomalous origin of coronary arteries
 - q. Pulmonary atresia
 - r. Central pulmonary stenosis
 - s. Systemic to pulmonary collaterals
2. Acquired diseases of the vessels
 - a. Diagnosis and follow-up of thoracic and abdominal aortic aneurysm including Marfan syndrome

- b. Diagnosis and follow-up of chronic aortic dissection
 - c. Diagnosis of aortic intramural hemorrhage
 - d. Diagnosis of penetrating ulcers of the aorta
 - e. Pulmonary artery anatomy and flow
 - f. Assessment of thoracic, abdominal and pelvic veins
 - g. Assessment of renal arteries
 - h. Assessment of iliac, femoral and lower leg arteries
 - i. Assessment of thoracic great vessel origins
 - j. Assessment of cervical carotid arteries
 - k. Assessment of pulmonary veins including one in association with an electrophysiology ablation for atrial fibrillation
3. Coronary artery disease
- a. Assessment of global ventricular (left and right) function and mass
 - b. Coronary anomalies
 - c. Acute and chronic myocardial infarction - detection and assessment; myocardial viability
4. Pericardial disease, cardiac tumors, cardiomyopathies and cardiac transplants
- a. Detection and characterization of cardiac and pericardiac tumors
 - b. Hypertrophic cardiomyopathy
 - c. Dilated cardiomyopathy - differentiation from dysfunction related to coronary artery disease
 - d. Arrhythmogenic right ventricular cardiomyopathy (dysplasia)
 - e. Siderotic cardiomyopathy (in particular thalassemia)
 - f. Restrictive cardiomyopathy
5. Valvular heart disease
- a. Cardiac chamber anatomy and function
 - b. Quantification of regurgitation or stenosis
- B. **Experimental / investigational** indications:
- 1. CMR as a screening test
 - 2. Coronary MRA for screening of coronary artery disease
- C. Subject to review for medical necessity:
- 1. CMR for indications that are not listed above
 - 2. Duplication of services such as CT scan, radionuclide studies, ultrasound, and MRI

CODING

The following codes for treatment and procedures applicable to this policy are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

CPT/HCPCS

75557	Cardiac magnetic resonance imaging for morphology and function without contrast material;
75559	Cardiac magnetic resonance imaging for morphology and function without contrast material; with stress imaging
75561	Cardiac magnetic resonance imaging for morphology and function without contrast material(s), followed by contrast material(s) and further sequences;
75563	Cardiac magnetic resonance imaging for morphology and function without contrast material(s), followed by contrast material(s) and further sequences; with stress imaging
75565	Cardiac magnetic resonance imaging for velocity flow mapping (List separately in addition to code for primary procedure)

ICD-10 Diagnoses

A18.84	Tuberculosis of heart
A52.00	Cardiovascular syphilis, unspecified
A52.01	Syphilitic aneurysm of aorta
A52.02	Syphilitic aortitis
A52.03	Syphilitic endocarditis
A52.04	Syphilitic cerebral arteritis
A52.06	Other syphilitic heart involvement
A52.09	Other cardiovascular syphilis
C34.01	Malignant neoplasm of right main bronchus
C34.02	Malignant neoplasm of left main bronchus
C34.11	Malignant neoplasm of upper lobe, right bronchus or lung
C34.12	Malignant neoplasm of upper lobe, left bronchus or lung
C34.2	Malignant neoplasm of middle lobe, bronchus or lung
C34.31	Malignant neoplasm of lower lobe, right bronchus or lung
C34.32	Malignant neoplasm of lower lobe, left bronchus or lung
C34.80	Malignant neoplasm of overlapping sites of unspecified bronchus and lung
C34.81	Malignant neoplasm of overlapping sites of right bronchus and lung
C34.82	Malignant neoplasm of overlapping sites of left bronchus and lung
C38.0	Malignant neoplasm of heart
C38.1	Malignant neoplasm of anterior mediastinum
C38.2	Malignant neoplasm of posterior mediastinum
C38.3	Malignant neoplasm of mediastinum, part unspecified
C38.4	Malignant neoplasm of pleura
C38.8	Malignant neoplasm of overlapping sites of heart, mediastinum and pleura
C45.0	Mesothelioma of pleura
C45.2	Mesothelioma of pericardium
C47.3	Malignant neoplasm of peripheral nerves of thorax

C49.3	Malignant neoplasm of connective and soft tissue of thorax
C78.01	Secondary malignant neoplasm of right lung
C78.02	Secondary malignant neoplasm of left lung
C78.1	Secondary malignant neoplasm of mediastinum
C78.2	Secondary malignant neoplasm of pleura
D14.31	Benign neoplasm of right bronchus and lung
D14.32	Benign neoplasm of left bronchus and lung
D15.0	Benign neoplasm of thymus
D15.1	Benign neoplasm of heart
D15.2	Benign neoplasm of mediastinum
D17.4	Benign lipomatous neoplasm of intrathoracic organs
D19.0	Benign neoplasm of mesothelial tissue of pleura
D21.3	Benign neoplasm of connective and other soft tissue of thorax
D38.1	Neoplasm of uncertain behavior of trachea, bronchus and lung
D38.2	Neoplasm of uncertain behavior of pleura
D38.3	Neoplasm of uncertain behavior of mediastinum
D38.4	Neoplasm of uncertain behavior of thymus
I00	Rheumatic fever without heart involvement
I01.0	Acute rheumatic pericarditis
I01.1	Acute rheumatic endocarditis
I01.2	Acute rheumatic myocarditis
I01.8	Other acute rheumatic heart disease
I02.0	Rheumatic chorea with heart involvement
I02.9	Rheumatic chorea without heart involvement
I05.0	Rheumatic mitral stenosis
I05.1	Rheumatic mitral insufficiency
I05.2	Rheumatic mitral stenosis with insufficiency
I05.8	Other rheumatic mitral valve diseases
I06.0	Rheumatic aortic stenosis
I06.1	Rheumatic aortic insufficiency
I06.2	Rheumatic aortic stenosis with insufficiency
I06.8	Other rheumatic aortic valve diseases
I07.0	Rheumatic tricuspid stenosis
I07.1	Rheumatic tricuspid insufficiency
I07.2	Rheumatic tricuspid stenosis and insufficiency
I07.8	Other rheumatic tricuspid valve diseases
I08.0	Rheumatic disorders of both mitral and aortic valves
I08.1	Rheumatic disorders of both mitral and tricuspid valves
I08.2	Rheumatic disorders of both aortic and tricuspid valves
I08.3	Combined rheumatic disorders of mitral, aortic and tricuspid valves
I08.8	Other rheumatic multiple valve diseases
I09.0	Rheumatic myocarditis
I09.1	Rheumatic diseases of endocardium, valve unspecified
I09.2	Chronic rheumatic pericarditis
I09.81	Rheumatic heart failure
I09.89	Other specified rheumatic heart diseases
I20.0	Unstable angina
I24.0	Acute coronary thrombosis not resulting in myocardial infarction

- I24.1 Dressler's syndrome
- I24.8 Other forms of acute ischemic heart disease
- I25.110 Atherosclerotic heart disease of native coronary artery with unstable angina pectoris
- I25.710 Atherosclerosis of autologous vein coronary artery bypass graft(s) with unstable angina pectoris
- I25.720 Atherosclerosis of autologous artery coronary artery bypass graft(s) with unstable angina pectoris
- I25.730 Atherosclerosis of nonautologous biological coronary artery bypass graft(s) with unstable angina pectoris
- I25.750 Atherosclerosis of native coronary artery of transplanted heart with unstable angina
- I25.760 Atherosclerosis of bypass graft of coronary artery of transplanted heart with unstable angina
- I25.790 Atherosclerosis of other coronary artery bypass graft(s) with unstable angina pectoris
- I26.01 Septic pulmonary embolism with acute cor pulmonale
- I26.09 Other pulmonary embolism with acute cor pulmonale
- I26.90 Septic pulmonary embolism without acute cor pulmonale
- I26.99 Other pulmonary embolism without acute cor pulmonale
- I28.0 Arteriovenous fistula of pulmonary vessels
- I28.1 Aneurysm of pulmonary artery
- I28.8 Other diseases of pulmonary vessels
- I30.0 Acute nonspecific idiopathic pericarditis
- I30.1 Infective pericarditis
- I30.8 Other forms of acute pericarditis
- I31.0 Chronic adhesive pericarditis
- I31.1 Chronic constrictive pericarditis
- I31.2 Hemopericardium, not elsewhere classified
- I31.3 Pericardial effusion (noninflammatory)
- I31.4 Cardiac tamponade
- I31.8 Other specified diseases of pericardium
- I32 Pericarditis in diseases classified elsewhere
- I33.0 Acute and subacute infective endocarditis
- I33.9 Acute and subacute endocarditis, unspecified
- I34.0 Nonrheumatic mitral (valve) insufficiency
- I34.1 Nonrheumatic mitral (valve) prolapse
- I34.2 Nonrheumatic mitral (valve) stenosis
- I34.8 Other nonrheumatic mitral valve disorders
- I35.0 Nonrheumatic aortic (valve) stenosis
- I35.1 Nonrheumatic aortic (valve) insufficiency
- I35.2 Nonrheumatic aortic (valve) stenosis with insufficiency
- I35.8 Other nonrheumatic aortic valve disorders
- I36.0 Nonrheumatic tricuspid (valve) stenosis
- I36.1 Nonrheumatic tricuspid (valve) insufficiency
- I36.2 Nonrheumatic tricuspid (valve) stenosis with insufficiency
- I36.8 Other nonrheumatic tricuspid valve disorders
- I37.0 Nonrheumatic pulmonary valve stenosis
- I37.1 Nonrheumatic pulmonary valve insufficiency
- I37.2 Nonrheumatic pulmonary valve stenosis with insufficiency

I37.8	Other nonrheumatic pulmonary valve disorders
I38	Endocarditis, valve unspecified
I39	Endocarditis and heart valve disorders in diseases classified elsewhere
I40.0	Infective myocarditis
I40.1	Isolated myocarditis
I40.8	Other acute myocarditis
I41	Myocarditis in diseases classified elsewhere
I71.01	Dissection of thoracic aorta
I71.02	Dissection of abdominal aorta
I71.03	Dissection of thoracoabdominal aorta
I71.1	Thoracic aortic aneurysm, ruptured
I71.2	Thoracic aortic aneurysm, without rupture
I71.3	Abdominal aortic aneurysm, ruptured
I71.4	Abdominal aortic aneurysm, without rupture
I71.5	Thoracoabdominal aortic aneurysm, ruptured
I71.6	Thoracoabdominal aortic aneurysm, without rupture
I71.9	Aortic aneurysm of unspecified site, without rupture
I74.11	Embolism and thrombosis of thoracic aorta
I79.0	Aneurysm of aorta in diseases classified elsewhere
I81	Portal vein thrombosis
I82.0	Budd-Chiari syndrome
I82.220	Acute embolism and thrombosis of inferior vena cava
I82.221	Chronic embolism and thrombosis of inferior vena cava
J86.9	Pyothorax without fistula
J90	Pleural effusion, not elsewhere classified
J92.0	Pleural plaque with presence of asbestos
J92.9	Pleural plaque without asbestos
J94.1	Fibrothorax
J94.2	Hemothorax
J94.8	Other specified pleural conditions
K75.1	Phlebitis of portal vein
M32.11	Endocarditis in systemic lupus erythematosus
M32.12	Pericarditis in systemic lupus erythematosus
Q20.0	Common arterial trunk
Q20.1	Double outlet right ventricle
Q20.2	Double outlet left ventricle
Q20.3	Discordant ventriculoarterial connection
Q20.4	Double inlet ventricle
Q20.5	Discordant atrioventricular connection
Q20.6	Isomerism of atrial appendages
Q20.8	Other congenital malformations of cardiac chambers and connections
Q21.0	Ventricular septal defect
Q21.1	Atrial septal defect
Q21.2	Atrioventricular septal defect
Q21.3	Tetralogy of Fallot
Q21.4	Aortopulmonary septal defect
Q21.8	Other congenital malformations of cardiac septa
Q22.0	Pulmonary valve atresia

- Q22.1 Congenital pulmonary valve stenosis
- Q22.2 Congenital pulmonary valve insufficiency
- Q22.3 Other congenital malformations of pulmonary valve
- Q22.4 Congenital tricuspid stenosis
- Q22.5 Ebstein's anomaly
- Q22.6 Hypoplastic right heart syndrome
- Q22.8 Other congenital malformations of tricuspid valve
- Q23.0 Congenital stenosis of aortic valve
- Q23.1 Congenital insufficiency of aortic valve
- Q23.2 Congenital mitral stenosis
- Q23.3 Congenital mitral insufficiency
- Q23.4 Hypoplastic left heart syndrome
- Q23.8 Other congenital malformations of aortic and mitral valves
- Q24.0 Dextrocardia
- Q24.1 Levocardia
- Q24.2 Cor triatriatum
- Q24.3 Pulmonary infundibular stenosis
- Q24.4 Congenital subaortic stenosis
- Q24.5 Malformation of coronary vessels
- Q24.6 Congenital heart block
- Q24.8 Other specified congenital malformations of heart
- Q25.0 Patent ductus arteriosus
- Q25.1 Coarctation of aorta
- Q25.21 Interruption of aortic arch
- Q25.29 Other atresia of aorta
- Q25.3 Supravalvular aortic stenosis
- Q25.40 Congenital malformation of aorta unspecified
- Q25.41 Absence and aplasia of aorta
- Q25.42 Hypoplasia of aorta
- Q25.43 Congenital aneurysm of aorta
- Q25.44 Congenital dilation of aorta
- Q25.45 Double aortic arch
- Q25.46 Tortuous aortic arch
- Q25.47 Right aortic arch
- Q25.48 Anomalous origin of subclavian artery
- Q25.49 Other congenital malformations of aorta
- Q25.8 Other congenital malformations of other great arteries
- Q26.0 Congenital stenosis of vena cava
- Q26.1 Persistent left superior vena cava
- Q26.2 Total anomalous pulmonary venous connection
- Q26.3 Partial anomalous pulmonary venous connection
- Q26.4 Anomalous pulmonary venous connection, unspecified
- Q26.8 Other congenital malformations of great veins
- Q87.40 Marfan's syndrome, unspecified
- Q87.410 Marfan's syndrome with aortic dilation
- Q87.418 Marfan's syndrome with other cardiovascular manifestations
- Q87.42 Marfan's syndrome with ocular manifestations
- Q87.43 Marfan's syndrome with skeletal manifestation

R09.1	Pleurisy
R22.2	Localized swelling, mass and lump, trunk
R93.1	Abnormal findings on diagnostic imaging of heart and coronary circulation
R93.89	Abnormal findings on diagnostic imaging of other specified body structures
R94.30	Abnormal result of cardiovascular function study, unspecified
R94.31	Abnormal electrocardiogram [ECG] [EKG]
T80.0xxA	Air embolism following infusion, transfusion and therapeutic injection, initial encounter
T81.718A	Complication of other artery following a procedure, not elsewhere classified, initial encounter
T81.72xA	Complication of vein following a procedure, not elsewhere classified, initial encounter
T82.817A	Embolism of cardiac prosthetic devices, implants and grafts, initial encounter
T82.818A	Embolism of vascular prosthetic devices, implants and grafts, initial encounter
Z95.5	Presence of coronary angioplasty implant and graft
Z98.61	Coronary angioplasty status

REVISIONS

Effective 07-01-2006	<ul style="list-style-type: none"> The Medical Director added to the Policy section "of the coronary arteries", removed "as a screening test" from CV MRI and removed "for diagnosis and screening" from CV MRA for clarification.
Effective 11-01-2007	<ul style="list-style-type: none"> Policy section was revised to combine information from item F. to B11. Item F. was deleted and stated, "Pulmonary venous assessment in association with atrial fibrillation dysfunctions prior to electro physiology ablation." Item B11 was modified from, "Assessment of pulmonary veins" to its current verbiage. The following paragraph was deleted to remove the definition of class I classification of cardiovascular conditions: "CMR is medically necessary for indications that include an expert Consensus panel's class I classification of cardiovascular conditions. A class I classification is defined as: provides clinically relevant information and is usually appropriate; may be used as first line imaging technique; usually supported by substantial literature." Under "Experimental/investigational indications:" added to number 2, "for diagnosis and screening". Under "Subject to review for medical necessity:" added to number 1, "...indications that are not listed above." and deleted, "...all indications. Medical records should clearly document medical necessity." A Diagnosis section was added to the policy to reflect all the appropriate diagnoses eligible for this procedure. Previously no diagnoses codes were reflected in the policy. Revision section was added. References were updated.
01-01-2010	<p>In Coding section:</p> <ul style="list-style-type: none"> Removed CPT Codes: 75552, 75553, 75554, 75555 (effective January 1, 2008) Removed CPT Codes: 75558, 75560, 75562, 75564 (effective January 2, 2010) Added CPT Codes: 75557, 75558, 75559, 75560, 75561, 75562, 75563, 75564 (effective January 1, 2008) Added CPT Code: 75565 (effective January 1, 2010) Removed Diagnosis Code: 794.30 Added Diagnosis Codes: 411.0-410.9, 415.12, 423.3, 794.31
02-15-2013	Added Medical Policy and Coding Disclaimers.

	In the Policy section: <ul style="list-style-type: none"> Formatted medical policy language. In Item B, #2, added "of coronary artery disease" to read "Coronary MRA for diagnosis and screening of coronary artery disease"
	In Coding section: <ul style="list-style-type: none"> Nomenclature reviewed and updated
12-11-2013	Policy reviewed.
	In Coding section: <ul style="list-style-type: none"> Added ICD-10 Diagnosis codes (<i>Effective October 1, 2014</i>)
	Updated Reference section.
04-15-2014	In Policy section: <ul style="list-style-type: none"> In Item B 2 removed "diagnosis and" to read, "Coronary MRA for screening of coronary artery disease."
07-15-2014	Description section reviewed.
	In Policy section: <ul style="list-style-type: none"> In Item A b 5, removed "apical" to read, "Hypertrophic cardiomyopathy" In Item A 4 added a new indication of, "f. Restrictive cardiomyopathy" In Item A 5 b added "or stenosis" to read "Quantification of regurgitation or stenosis"
	Coding section reviewed
	References updated
06-10-2015	Policy reviewed; no changes made.
06-08-2016	Policy reviewed; no changes made.
10-01-2016	In Coding section: <ul style="list-style-type: none"> Added ICD-10 codes effective 10-01-2016: Q25.21, Q25.29, Q25.40, Q25.41, Q25.42, Q25.43, Q25.44, Q25.45, Q25.46, Q25.47, Q25.48, Q25.49 Termed ICD-10 codes effective 09-30-2016: Q25.2, Q25.4
05-10-2017	Policy reviewed; no changes made.
04-25-2018	In Coding section: <ul style="list-style-type: none"> Removed ICD-9 codes.
	Remainder of policy reviewed; no changes made.
10-01-2018	In Coding section: <ul style="list-style-type: none"> Added ICD-10 code: R93.89. Removed ICD-10 code: R93.8.

REFERENCES

1. Pennell, D.J., Sachem, U.P., Higgins, C.B., et al. (2004). Clinical Indications for Cardiovascular Magnetic Resonance: Consensus Panel Report. *Journal of Cardiovascular Magnetic Resonance* 6, No.4: 727-765.
2. Blue Cross and Blue Shield of Kansas Cardiology Liaison Committee, May 2, 2007; May 2013; May 2014; May 2015.
3. Blue Cross and Blue Shield of Kansas Medical Advisory Committee (MAC), August 2, 2007.