

Medical Policy



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Title: Cardiovascular Magnetic Resonance (CMR)

Professional

Original Effective Date: August 4, 2005

Revision Date(s): February 27, 2006,

May 2, 2007

Current Effective Date: November 1, 2007

Institutional

Original Effective Date: July 1, 2006

Revision Date(s): May 2, 2007

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DESCRIPTION

Cardiovascular Magnetic Resonance is established in clinical practice for the diagnosis and management 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

Medically necessary indications for CMR include:

A. Congenital heart disease

1. Assessment of shunt size
2. Situs anomalies with complex congenital heart disease
3. Anomalous pulmonary venous return, especially in complex anomalies and cor triatriatum
4. Anomalous systemic venous return
5. Systemic or pulmonary venous obstruction
6. Ventricular Septal Defect (VSD) associated with complex anomalies
7. Supracristal VSD
8. Evaluation of right and left ventricular volumes, mass and function
9. Pulmonary regurgitation
10. Supravalvular aortic stenosis
11. Post-operative follow-up of shunts
12. Aortic (sinus Valsalva) aneurysm
13. Aortic coarctation
14. Vascular rings
15. Aortopulmonary window
16. Anomalous origin of coronary arteries
17. Pulmonary atresia
18. Central pulmonary stenosis
19. Systemic to pulmonary collaterals

B. Acquired diseases of the vessels

1. Diagnosis and follow-up of thoracic and abdominal aortic aneurysm including Marfan disease
2. Diagnosis and follow-up of chronic aortic dissection
3. Diagnosis of aortic intramural hemorrhage
4. Diagnosis of penetrating ulcers of the aorta
5. Pulmonary artery anatomy and flow
6. Assessment of thoracic, abdominal and pelvic veins
7. Assessment of renal arteries
8. Assessment of iliac, femoral and lower leg arteries
9. Assessment of thoracic great vessel origins
10. Assessment of cervical carotid arteries
11. Assessment of pulmonary veins including one in association with an electrophysiology ablation for atrial fibrillation

C. Coronary artery disease

1. Assessment of global ventricular (left and right) function and mass
2. Coronary anomalies

3. Acute and chronic myocardial infarction - detection and assessment; myocardial viability
- D. Pericardial disease, cardiac tumors, cardiomyopathies and cardiac transplants
1. Detection and characterization of cardiac and pericardiac tumors
 2. Hypertrophic cardiomyopathy; apical
 3. Dilated cardiomyopathy - differentiation from dysfunction related to coronary artery disease
 4. Arrhythmogenic right ventricular cardiomyopathy (dysplasia)
 5. Siderotic cardiomyopathy (in particular thalassemia)
- E. Valvular heart disease
1. Cardiac chamber anatomy and function
 2. Quantification of regurgitation

Experimental/investigational indications:

1. CMR as a screening test
2. Coronary MRA for diagnosis and screening

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

REVENUE CODE

061X

CPT Codes

75552	Cardiac magnetic resonance imaging for morphology; without contract material
75553	Cardiac magnetic resonance imaging for morphology; with contract material
75554	Cardiac magnetic resonance imaging for function, with or without morphology; complete study
75555	Cardiac magnetic resonance imaging for function, with or without morphology; limited study

DIAGNOSIS

Diagnoses are otherwise subject to medical policy as stated above

093.0	Aneurysm of aorta, specified as syphilitic
093.1	Syphilitic aortitis
093.20	Syphilitic endocarditis; valve, unspecified
093.21	Syphilitic endocarditis; mitral valve
093.22	Syphilitic endocarditis; aortic valve

093.23	Syphilitic endocarditis; tricuspid valve
093.24	Syphilitic endocarditis; pulmonary valve
093.81	Other specified cardiovascular syphilis; syphilitic pericarditis
093.82	Other specified cardiovascular syphilis; syphilitic myocarditis
093.89	Other specified cardiovascular syphilis; other
093.9	Cardiovascular syphilis, unspecified
162.2	Malignant neoplasm of trachea, bronchus, and lung; main bronchus
162.3	Malignant neoplasm of trachea, bronchus, and lung; upper lob, bronchus or lung
162.4	Malignant neoplasm of trachea, bronchus, and lung; middle lobe, bronchus or lung
162.5	Malignant neoplasm of trachea, bronchus, and lung; lower lobe, bronchus or lung
162.8	Malignant neoplasm of trachea, bronchus, and lung; other parts of bronchus or lung
162.9	Malignant neoplasm of trachea, bronchus, and lung; bronchus and lung, unspecified
163.0	Malignant neoplasm of pleura; parietal pleura
163.1	Malignant neoplasm of pleura; visceral pleura
163.8	Malignant neoplasm of pleura; other specified sites of pleura
163.9	Malignant neoplasm of pleura; pleura, unspecified
164.1	Malignant neoplasm of bronchus, lung, pleura, thymus, heart, and mediastinum; heart
164.2	Malignant neoplasm of bronchus, lung, pleura, thymus, heart, and mediastinum; anterior mediastinum
164.3	Malignant neoplasm of bronchus, lung, pleura, thymus, heart, and mediastinum; posterior mediastinum
164.8	Malignant neoplasm of bronchus, lung, pleura, thymus, heart, and mediastinum; other
164.9	Malignant neoplasm of bronchus, lung, pleura, thymus, heart, and mediastinum; mediastinum, part unspecified
171.4	Malignant neoplasm of connective and other soft tissue; thorax
197.0	Secondary malignant neoplasm of respiratory and digestive systems; lung
197.1	Secondary malignant neoplasm of respiratory and digestive systems; mediastinum
197.2	Secondary malignant neoplasm of respiratory and digestive systems; pleura
212.3	Benign neoplasm of respiratory and intrathoracic organs; bronchus and lung
212.4	Benign neoplasm of respiratory and intrathoracic organs; pleura
212.5	Benign neoplasm of respiratory and intrathoracic organs; mediastinum
212.6	Benign neoplasm of respiratory and intrathoracic organs; thymus
212.7	Benign neoplasm of respiratory and intrathoracic organs; heart
214.2	Lipoma; intrathoracic organs
215.4	Other benign neoplasm of connective and other soft tissue; thorax
235.7	Neoplasm of uncertain behavior of digestive and respiratory systems; trachea, bronchus, and lung
235.8	Neoplasm of uncertain behavior of digestive and respiratory systems; pleura, thymus, and mediastinum
390	Rheumatic fever without mention of heart involvement
391.0	Rheumatic fever with heart involvement; acute rheumatic pericarditis
391.1	Rheumatic fever with heart involvement; acute rheumatic endocarditis

391.2	Rheumatic fever with heart involvement; acute rheumatic myocarditis
391.8	Rheumatic fever with heart involvement; other acute rheumatic heart disease
391.9	Rheumatic fever with heart involvement; acute rheumatic heart disease, unspecified
392.0	Rheumatic chorea; with heart involvement
392.9	Rheumatic chorea; without mention of heart involvement
393	Chronic rheumatic pericarditis
394.0	Diseases of mitral valve; mitral stenosis
394.1	Diseases of mitral valve; rheumatic mitral insufficiency
394.2	Diseases of mitral valve; mitral stenosis with insufficiency
394.9	Diseases of mitral valve; other and unspecified mitral valve diseases
395.0	Diseases of aortic valve; rheumatic aortic stenosis
395.1	Diseases of aortic valve; rheumatic aortic insufficiency
395.2	Diseases of aortic valve; rheumatic aortic stenosis with insufficiency
395.9	Diseases of aortic valve; other and unspecified rheumatic aortic diseases
396.0	Diseases of mitral and aortic valves; mitral valve stenosis and aortic valve stenosis
396.1	Diseases of mitral and aortic valves; mitral valve stenosis and aortic valve
396.2	Diseases of mitral and aortic valves; mitral valve insufficiency and aortic valve
396.3	Diseases of mitral and aortic valves; mitral valve insufficiency and aortic valve insufficiency
396.8	Diseases of mitral and aortic valves; multiple involvement of mitral and aortic valves
396.9	Diseases of mitral and aortic valves; mitral and aortic valve diseases, unspecified
397.0	Diseases of other and endocardial structures; diseases of tricuspid valve
397.1	Diseases of other and endocardial structures; rheumatic diseases of pulmonary valve
397.9	Diseases of other and endocardial structures; rheumatic diseases of endocardium, valve unspecified
398.0	Other rheumatic heart disease; rheumatic myocarditis
398.90	Other and unspecified rheumatic heart diseases; rheumatic heart disease, unspecified
398.91	Other and unspecified rheumatic heart diseases; rheumatic heart failure (congestive)
398.99	Other and unspecified rheumatic heart diseases; other
411.0	Other acute and subacute forms of ischemic heart disease; postmyocardial infarction syndrome
411.1	Other acute and subacute forms of ischemic heart disease; intermediate coronary syndrome
411.81	Other acute and subacute forms of ischemic heart disease; acute coronary occlusion without myocardial infarction
411.89	Other acute and subacute forms of ischemic heart disease; other
415.11	Pulmonary embolism and infarction; iatrogenic pulmonary embolism and infarction
415.19	Pulmonary embolism and infarction; other`
417.0	Other diseases of pulmonary circulation; arteriovenous fistula of pulmonary vessels
417.1	Other diseases of pulmonary circulation; aneurysm of pulmonary artery

417.8	Other diseases of pulmonary circulation; other specified diseases of pulmonary circulation
420.0	Acute pericarditis; in diseases classified elsewhere
420.90	Other and unspecified acute pericarditis; acute pericarditis, unspecified`
420.91	Other and unspecified acute pericarditis; acute idiopathic pericarditis
420.99	Other and unspecified acute pericarditis; other
421.0	Acute and subacute endocarditis; acute and subacute bacterial endocarditis
421.1	Acute and subacute endocarditis; acute and subacute infective endocarditis in diseases classified elsewhere
421.9	Acute and subacute endocarditis; acute endocarditis, unspecified
422.0	Acute myocarditis; acute myocarditis in diseases classified elsewhere
422.90	Acute myocarditis; acute myocarditis, unspecified
422.91	Acute myocarditis; idiopathic myocarditis
422.92	Acute myocarditis; septic myocarditis
422.93	Acute myocarditis; toxic myocarditis
422.99	Acute myocarditis; toxic myocarditis
423.0	Other diseases of pericardium; hemopericardium
423.1	Other diseases of pericardium; adhesive pericarditis
423.2	Other diseases of pericardium; constrictive pericarditis
423.8	Other diseases of pericardium; other specified diseases of pericardium
423.9	Other diseases of pericardium; unspecified disease of pericardium
424.0	Other diseases of endocardium; mitral valve disorders
424.1	Other diseases of endocardium; aortic valve disorders
424.2	Other diseases of endocardium; tricuspid valve disorders, specified as non-rheumatic
424.3	Other diseases of endocardium; pulmonary valve disorders
424.90	Other diseases of endocardium; endocarditis, valve unspecified, unspecified cause
424.91	Other diseases of endocardium; endocarditis in diseases classified elsewhere
424.99	Other diseases of endocardium; other
441.00	Dissection of aorta; unspecified site
441.01	Dissection of aorta; thoracic
441.02	Dissection of aorta; abdominal
441.03	Dissection of aorta; thoracoabdominal
441.1	Thoracic aneurysm, ruptured
441.2	Thoracic aneurysm without mention of rupture
441.3	Abdominal aneurysm, ruptured
441.4	Abdominal aneurysm without mention of rupture
441.5	Aortic aneurysm of unspecified site, ruptured
441.6	Thoracoabdominal aneurysm, ruptured
441.7	Thoracoabdominal aneurysm, without mention of rupture
441.9	Aortic aneurysm of unspecified site without mention of rupture
444.0	Arterial embolism and thrombosis; of abdominal aorta
444.1	Arterial embolism and thrombosis; of thoracic aorta
452	Portal vein thrombosis
453.0	Other venous embolism and thrombosis; Budd-Chiari syndrome
453.2	Other venous embolism and thrombosis; of vena cava

511.0	Pleurisy; without mention of effusion or current tuberculosis
511.1	Pleurisy; with effusion, with mention of a bacterial cause other than tuberculosis
511.8	Pleurisy; other specified forms of effusion, except tuberculous
572.1	Liver abscess and sequelae of chronic liver disease; portal pyemia
745.0	Bulbus cordis anomalies and anomalies of cardiac septal closure; common truncus
745.10	Transposition of great vessels; complete transposition of great vessels
745.11	Transposition of great vessels; double outlet right ventricle
745.12	Transposition of great vessels; corrected transposition of great vessels
745.19	Transposition of great vessels; other
745.2	Bulbus cordis anomalies and anomalies of cardiac septal closure; Tetralogy of Fallot
745.3	Bulbus cordis anomalies and anomalies of cardiac septal closure; common ventricle
745.4	Bulbus cordis anomalies and anomalies of cardiac septal closure; ventricular septal defect
745.5	Bulbus cordis anomalies and anomalies of cardiac septal closure; ostium secundum type atrial septal defect
745.60	Endocardial cushion defects; unspecified type
745.61	Endocardial cushion defects; ostium primum defect
745.69	Endocardial cushion defects; other
745.7	Bulbus cordis anomalies and anomalies of cardiac septal closure; cor biloculare
745.8	Bulbus cordis anomalies and anomalies of cardiac septal closure; other
745.9	Bulbus cordis anomalies and anomalies of cardiac septal closure; unspecified defect of septal closure
746.00	Anomalies of pulmonary valve; pulmonary valve anomaly, unspecified
746.01	Anomalies of pulmonary valve; atresia, congenital
746.02	Anomalies of pulmonary valve; stenosis, congenital
746.09	Anomalies of pulmonary valve; other
746.1	Other congenital anomalies of heart; tricuspid atresia and stenosis, congenital
746.2	Other congenital anomalies of heart; Ebstein's anomaly
746.3	Other congenital anomalies of heart; congenital stenosis of aortic valve
746.4	Other congenital anomalies of heart; congenital insufficiency of aortic valve
746.5	Other congenital anomalies of heart; congenital mitral stenosis
746.6	Other congenital anomalies of heart; congenital mitral insufficiency
746.7	Other congenital anomalies of heart; hypoplastic left heart syndrome
746.81	Other specified anomalies of heart; subaortic stenosis
746.82	Other specified anomalies of heart; cor triatriatum
746.83	Other specified anomalies of heart; infundibular pulmonic stenosis
746.84	Other specified anomalies of heart; obstructive anomalies of heart, not elsewhere classified
746.85	Other specified anomalies of heart; coronary artery anomaly
746.86	Other specified anomalies of heart; congenital heart block
746.87	Other specified anomalies of heart; malposition of heart and cardiac apex
746.89	Other specified anomalies of heart; other
746.9	Unspecified anomaly of heart
747.0	Other congenital anomalies of circulatory system; patent ductus arteriosus

747.10	Coarctation of aorta; (preductal) (postductal)
747.11	Coarctation of aorta; interruption of aortic arch
747.20	Other anomalies of aorta; unspecified
747.21	Other anomalies of aorta; anomalies of aortic arch
747.22	Other anomalies of aorta; atresia and stenosis or aorta
747.29	Other anomalies of aorta; other
747.3	Anomalies of pulmonary artery
747.40	Anomalies of great veins; unspecified
747.41	Anomalies of great veins; total anomalous pulmonary venous connection
747.42	Anomalies of great veins; partial anomalous pulmonary venous connection
747.49	Anomalies of great veins; other anomalies of great veins
759.82	Other specified anomalies; Marfan syndrome
786.6	Chest pain; swelling, mass, or lump in chest
793.2	Nonspecific abnormal findings on radiological and other examination of body structure; other intrathoracic organs
794.30	Cardiovascular; abnormal function study, unspecified
V45.82	Other postprocedural status; percutaneous transluminal 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.

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.
3. Blue Cross and Blue Shield of Kansas Medical Advisory Committee (MAC), August 2, 2007.