# American College of Radiology
# ACR Appropriateness Criteria®

## Nonischemic Myocardial Disease with Clinical Manifestations (Ischemic Cardiomyopathy Already Excluded)

**Variant 1: Suspected hypertrophic cardiomyopathy. Ischemic cardiomyopathy already excluded. Initial imaging.**

| Procedure | Appropriateness Category | SOE | Adults RRL | Peds RRL | Rating | Median | Final Tabulations | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| MRI heart function and morphology without and with IV contrast | Usually appropriate | Strong | O 0 mSv | O 0 mSv [ped] | 9 | 9 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 9 |

| References | Study Quality |
|---|---|
| 41 (20854967) | 3 |
| 33 (28912181) | 4 |
| 39 (26002385) | 4 |
| 42 (23498674) | 2 |
| 34 (26082555) | 2 |
| 35 (19234246) | 3 |
| 40 (22296938) | 4 |
| 43 (17690158) | 3 |
| 44 (25475749) | 1 |
| 46 (21733342) | 4 |
| 47 (26718199) | 4 |
| 45 (30282640) | 2 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| US echocardiography transthoracic resting | Usually appropriate | Limited | O 0 mSv | O 0 mSv [ped] | 9 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 10 |

| References | Study Quality |
|---|---|
| 50 (21514501) | 4 |
| 51 (25173338) | 4 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MRI heart function and morphology without IV contrast | Usually appropriate | Strong | O 0 mSv | O 0 mSv [ped] | 7 | 7 | 0 | 0 | 0 | 0 | 2 | 4 | 5 | 4 | 0 |

| References | Study Quality |
|---|---|
| 41 (20854967) | 3 |
| 33 (28912181) | 4 |
| 39 (26002385) | 4 |
| 42 (23498674) | 2 |
| 34 (26082555) | 2 |
| 35 (19234246) | 3 |
| 40 (22296938) | 4 |
| 43 (17690158) | 3 |
| 44 (25475749) | 1 |
| 46 (21733342) | 4 |
| 47 (26718199) | 4 |
| 45 (30282640) | 2 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CT heart function and morphology with IV contrast | May be appropriate | Strong | ☢☢☢☢ 10-30 mSv | ☢☢☢☢ 3-10 mSv [ped] | 6 | 6 | 0 | 0 | 0 | 2 | 6 | 6 | 2 | 0 | 0 |

| References | Study Quality |
|---|---|
| 38 (23064716) | 2 |
| 36 (24449335) | 2 |
| 37 (25022976) | 1 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| US echocardiography transthoracic stress | May be appropriate | Limited | O 0 mSv | O 0 mSv [ped] | 6 | 6 | 0 | 0 | 1 | 0 | 6 | 7 | 1 | 0 | 1 |

| References | Study Quality |
|---|---|
| 51 (25173338) | 4 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| US echocardiography transesophageal | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 3 | 3 | 5 | 2 | 4 | 0 | 2 | 1 | 0 | 1 | 0 |
| MRI heart with function and vasodilator stress perfusion without and with IV contrast | Usually not appropriate | Limited | O 0 mSv | O 0 mSv [ped] | 3 | 3 | 4 | 4 | 5 | 1 | 2 | 0 | 0 | 0 | 0 |

| References | Study Quality |
|---|---|

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 49 (25160568) | | 3 | | | | | | | | | | | |
| | | | 48 (29467047) | | 4 | | | | | | | | | | | |
| MRI heart with function and inotropic stress without and with IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 3 | 3 | 3 | 5 | 4 | 4 | 0 | 0 | 0 | 0 | 0 |
| CTA coronary arteries with IV contrast | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 2 | 2 | 3 | 6 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT chest with IV contrast | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 2 | 2 | 5 | 4 | 5 | 1 | 0 | 0 | 0 | 0 | 0 |
| CT chest without IV contrast | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 2 | 2 | 7 | 4 | 3 | 1 | 0 | 0 | 0 | 0 | 0 |
| CT chest without and with IV contrast | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 2 | 2 | 5 | 6 | 3 | 1 | 0 | 0 | 0 | 0 | 0 |
| Arteriography coronary | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | | 2 | 2 | 7 | 5 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Arteriography coronary with ventriculography | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 2 | 2 | 4 | 8 | 2 | 1 | 0 | 0 | 0 | 0 | 0 |
| MRI chest without IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 2 | 2 | 7 | 3 | 4 | 0 | 0 | 1 | 0 | 0 | 0 |
| MRI chest without and with IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 2 | 2 | 6 | 4 | 3 | 1 | 1 | 0 | 0 | 0 | 0 |
| MRI heart with function and inotropic stress without IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 2 | 2 | 6 | 4 | 5 | 1 | 0 | 0 | 0 | 0 | 0 |
| FDG-PET/CT heart | Usually not appropriate | Expert Consensus | ☢☢☢☢ 10-30 mSv | ☢☢☢☢ 3-10 mSv [ped] | 2 | 2 | 6 | 6 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| CT coronary calcium | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | | 1 | 1 | 8 | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |

**Variant 2: Suspected restrictive cardiomyopathy or infiltrative disease. Ischemic cardiomyopathy already excluded. Initial imaging.**

| Procedure | Appropriateness Category | SOE | Adults RRL | Peds RRL | Rating | Median | Final Tabulations | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| MRI heart function and morphology without and with IV contrast | Usually appropriate | Strong | O 0 mSv | O 0 mSv [ped] | 9 | 9 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 4 | 9 |

| References | Study Quality |
|---|---|
| 69 (15893188) | 2 |
| 74 (11913479) | 3 |
| 2 (27438188) | 4 |
| 63 (27267362) | Good |
| 66 (26362631) | 3 |
| 75 (25104503) | 3 |
| 78 (24593856) | 2 |
| 65 (23498672) | 2 |
| 70 (23436872) | 4 |
| 52 (20413025) | 4 |
| 54 (18084757) | 2 |
| 56 (21415124) | 3 |
| 64 (24412186) | 3 |
| 67 (19032744) | 3 |
| 72 (24829369) | 2 |
| 76 (23775258) | 4 |
| 77 (17968945) | 2 |
| 79 (17399811) | 4 |
| 62 (21720941) | 3 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| US echocardiography transthoracic resting | Usually appropriate | Limited | O 0 mSv | O 0 mSv [ped] | 9 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 9 |

| References | Study Quality |
|---|---|

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 55 (26130811) | 4 | | | | | | | | | | | | | | | |
| 64 (24412186) | 3 | | | | | | | | | | | | | | | |
| 12 (27037982) | 4 | | | | | | | | | | | | | | | |
| 80 (19889655) | 4 | | | | | | | | | | | | | | | |
| 81 (22865865) | 3 | | | | | | | | | | | | | | | |
| MRI heart function and morphology without IV contrast | May be appropriate | Strong | O 0 mSv | O 0 mSv [ped] | 6 | 6 | 0 | 0 | 0 | 1 | 4 | 3 | 4 | 2 | 1 | |
| References | Study Quality | | | | | | | | | | | | | | | |
| 69 (15893188) | 2 | | | | | | | | | | | | | | | |
| 74 (11913479) | 3 | | | | | | | | | | | | | | | |
| 2 (27438188) | 4 | | | | | | | | | | | | | | | |
| 63 (27267362) | Good | | | | | | | | | | | | | | | |
| 66 (26362631) | 3 | | | | | | | | | | | | | | | |
| 75 (25104503) | 3 | | | | | | | | | | | | | | | |
| 78 (24593856) | 2 | | | | | | | | | | | | | | | |
| 65 (23498672) | 2 | | | | | | | | | | | | | | | |
| 70 (23436872) | 4 | | | | | | | | | | | | | | | |
| 52 (20413025) | 4 | | | | | | | | | | | | | | | |
| 54 (18084757) | 2 | | | | | | | | | | | | | | | |
| 56 (21415124) | 3 | | | | | | | | | | | | | | | |
| 64 (24412186) | 3 | | | | | | | | | | | | | | | |
| 67 (19032744) | 3 | | | | | | | | | | | | | | | |
| 72 (24829369) | 2 | | | | | | | | | | | | | | | |
| 76 (23775258) | 4 | | | | | | | | | | | | | | | |
| 77 (17968945) | 2 | | | | | | | | | | | | | | | |
| 79 (17399811) | 4 | | | | | | | | | | | | | | | |
| 62 (21720941) | 3 | | | | | | | | | | | | | | | |
| FDG-PET/CT heart | May be appropriate | Strong | ☢☢☢☢ 10-30 mSv | ☢☢☢☢ 3-10 mSv [ped] | 6 | 6 | 0 | 0 | 0 | 2 | 3 | 8 | 2 | 1 | 0 | |
| References | Study Quality | | | | | | | | | | | | | | | |
| 61 (28418949) | 2 | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 54 (18084757) | | 2 | | | | | | | | | | | | |
| | | 60 (22228794) | | Good | | | | | | | | | | | | |
| CT heart function and morphology with IV contrast | May be appropriate | Strong | ☢☢☢☢ 10-30 mSv | ☢☢☢☢ 3-10 mSv [ped] | 5 | 5 | 0 | 1 | 0 | 0 | 9 | 5 | 1 | 0 | 0 |
| | | References | | Study Quality | | | | | | | | | | | | |
| | | 58 (26209459) | | 1 | | | | | | | | | | | | |
| | | 57 (25693664) | | 3 | | | | | | | | | | | | |
| | | 59 (28382537) | | 2 | | | | | | | | | | | | |
| CTA coronary arteries with IV contrast | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 3 | 3 | 3 | 3 | 2 | 4 | 2 | 0 | 1 | 0 | 0 |
| CT chest with IV contrast | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 3 | 3 | 1 | 4 | 4 | 1 | 3 | 1 | 1 | 0 | 0 |
| CT chest without IV contrast | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 3 | 3 | 2 | 4 | 9 | 1 | 0 | 0 | 0 | 0 | 0 |
| Arteriography coronary with ventriculography | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 3 | 3 | 3 | 4 | 3 | 3 | 1 | 1 | 0 | 0 | 0 |
| MRI chest without IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 3 | 3 | 5 | 1 | 7 | 0 | 0 | 2 | 0 | 0 | 0 |
| MRI chest without and with IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 3 | 3 | 6 | 0 | 5 | 1 | 1 | 2 | 0 | 0 | 0 |
| MRI heart with function and inotropic stress without IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 3 | 3 | 4 | 3 | 3 | 0 | 3 | 1 | 1 | 0 | 0 |
| CT coronary calcium | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | | 2 | 2 | 6 | 5 | 2 | 1 | 1 | 0 | 0 | 0 | 0 |
| CT chest without and with IV contrast | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 2 | 2 | 5 | 4 | 4 | 1 | 0 | 0 | 1 | 0 | 0 |
| Arteriography coronary | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | | 2 | 2 | 6 | 6 | 2 | 1 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| US echocardiography transthoracic stress | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 2 | 2 | 3 | 6 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| US echocardiography transesophageal | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 2 | 2 | 6 | 7 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| MRI heart with function and vasodilator stress perfusion without and with IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 2 | 2 | 2 | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| MRI heart with function and inotropic stress without and with IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 2 | 2 | 2 | 8 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |

**Variant 3: Suspected nonischemic dilated and unclassified cardiomyopathy. Ischemic cardiomyopathy already excluded. Initial imaging.**

| Procedure | Appropriateness Category | SOE | Adults RRL | Peds RRL | Rating | Median | Final Tabulations | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| US echocardiography transthoracic resting | Usually appropriate | Strong | O 0 mSv | O 0 mSv [ped] | 9 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 8 |

| References | Study Quality |
|---|---|
| 121 (27798758) | 2 |
| 119 (24703918) | 4 |
| 122 (24400635) | 2 |
| 100 (28189542) | 4 |
| 120 (27338866) | 4 |
| 86 (22772366) | 2 |
| 95 (29850820) | 4 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MRI heart function and morphology without and with IV contrast | Usually appropriate | Strong | O 0 mSv | O 0 mSv [ped] | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 5 | 7 |

| References | Study Quality |
|---|---|
| 113 (27855805) | 3 |
| 99 (26762873) | 2 |
| 87 (26607916) | 4 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MRI heart function and morphology without IV contrast | Usually appropriate | Strong | O 0 mSv | O 0 mSv [ped] | 7 | 7 | 0 | 0 | 0 | 0 | 5 | 2 | 5 | 3 | 0 |

| References | Study Quality |
|---|---|
| 108 (25285584) | 3 |
| 84 (23470270) | 2 |
| 111 (23769489) | 3 |
| 68 (23602692) | 2 |
| 83 (24108563) | 4 |
| 97 (12821550) | 2 |
| 98 (23462786) | 2 |
| 100 (28189542) | 4 |
| 101 (24254478) | 4 |
| 102 (23500246) | 2 |
| 103 (21830182) | 4 |
| 104 (21245364) | 4 |
| 105 (25814625) | 3 |
| 106 (20451693) | 2 |
| 86 (22772366) | 2 |
| 107 (20089517) | 3 |
| 109 (17885073) | 2 |
| 110 (20417446) | 1 |
| 112 (22499849) | 3 |
| 114 (21771988) | 4 |
| 115 (22720998) | 2 |
| 116 (22293447) | 2 |
| 117 (22035445) | 2 |
| 118 (29128863) | 3 |
| 113 (27855805) | 3 |
| 99 (26762873) | 2 |
| 87 (26607916) | 4 |
| 108 (25285584) | 3 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CT heart function and morphology with IV contrast | May be appropriate | Strong | ☢☢☢☢ 10-30 mSv | ☢☢☢☢ 3-10 mSv [ped] | 6 | 6 | 0 | 0 | 0 | 2 | 2 | 7 | 4 | 0 | 0 |

| References | Study Quality |
|---|---|
| 84 (23470270) | 2 |
| 111 (23769489) | 3 |
| 83 (24108563) | 4 |
| 97 (12821550) | 2 |
| 98 (23462786) | 2 |
| 100 (28189542) | 4 |
| 101 (24254478) | 4 |
| 102 (23500246) | 2 |
| 103 (21830182) | 4 |
| 104 (21245364) | 4 |
| 105 (25814625) | 3 |
| 106 (20451693) | 2 |
| 86 (22772366) | 2 |
| 107 (20089517) | 3 |
| 109 (17885073) | 2 |
| 110 (20417446) | 1 |
| 112 (22499849) | 3 |
| 114 (21771988) | 4 |
| 115 (22720998) | 2 |
| 116 (22293447) | 2 |
| 117 (22035445) | 2 |
| 118 (29128863) | 3 |
| 91 (17512361) | 2 |
| 92 (23689383) | 2 |
| 93 (20634756) | 4 |
| 94 (20921912) | 4 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CTA coronary arteries with IV contrast | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 3 | 3 | 3 | 2 | 8 | 1 | 1 | 1 | 0 | 0 | 0 |
| CT coronary calcium | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | | 2 | 2 | 6 | 5 | 1 | 0 | 1 | 1 | 1 | 0 | 0 |
| CT chest with IV contrast | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 2 | 2 | 6 | 5 | 3 | 0 | 0 | 0 | 1 | 0 | 0 |
| CT chest without IV contrast | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 2 | 2 | 6 | 5 | 2 | 1 | 0 | 0 | 1 | 0 | 0 |
| CT chest without and with IV contrast | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 2 | 2 | 7 | 4 | 2 | 1 | 0 | 0 | 1 | 0 | 0 |
| Arteriography coronary | Usually not appropriate | Limited | ☢☢☢ 1-10 mSv | | 2 | 2 | 5 | 6 | 4 | 1 | 0 | 0 | 0 | 0 | 0 |
| | References | | Study Quality | | | | | | | | | | | | |
| | 90 (25009569) | | 4 | | | | | | | | | | | | |
| Arteriography coronary with ventriculography | Usually not appropriate | Limited | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 2 | 2 | 5 | 5 | 5 | 1 | 0 | 0 | 0 | 0 | 0 |
| | References | | Study Quality | | | | | | | | | | | | |
| | 90 (25009569) | | 4 | | | | | | | | | | | | |
| MRI chest without and with IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 2 | 2 | 7 | 1 | 5 | 1 | 0 | 0 | 1 | 0 | 0 |
| US echocardiography transthoracic stress | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 2 | 2 | 3 | 8 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| US echocardiography transesophageal | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 2 | 2 | 8 | 2 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| MRI heart with function and vasodilator stress perfusion without and with IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 2 | 2 | 4 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| MRI heart with function and inotropic stress without IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 2 | 2 | 6 | 6 | 3 | 1 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MRI heart with function and inotropic stress without and with IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 2 | 2 | 5 | 6 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| FDG-PET/CT heart | Usually not appropriate | Limited | ☢☢☢☢ 10-30 mSv | ☢☢☢☢ 3-10 mSv [ped] | 2 | 2 | 3 | 7 | 4 | 1 | 1 | 0 | 0 | 0 | 0 |

| References | Study Quality |
|---|---|
| 96 (26272522) | 3 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MRI chest without IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 1 | 1 | 8 | 3 | 3 | 0 | 0 | 0 | 1 | 0 | 0 |

**Variant 4: Suspected arrhythmogenic cardiomyopathy (arrhythmia of ventricular origin). Ischemic cardiomyopathy already excluded. Initial imaging.**

| Procedure | Appropriateness Category | SOE | Adults RRL | Peds RRL | Rating | Median | Final Tabulations | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| MRI heart function and morphology without IV contrast | Usually appropriate | Strong | O 0 mSv | O 0 mSv [ped] | 8 | 8 | 1 | 0 | 0 | 0 | 1 | 1 | 4 | 5 | 4 |

| References | Study Quality |
|---|---|
| 113 (27855805) | 3 |
| 99 (26762873) | 2 |
| 87 (26607916) | 4 |
| 108 (25285584) | 3 |
| 84 (23470270) | 2 |
| 111 (23769489) | 3 |
| 68 (23602692) | 2 |
| 83 (24108563) | 4 |
| 97 (12821550) | 2 |
| 98 (23462786) | 2 |
| 100 (28189542) | 4 |
| 101 (24254478) | 4 |
| 102 (23500246) | 2 |
| 104 (21245364) | 4 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MRI heart function and morphology without and with IV contrast | Usually appropriate | Strong | O 0 mSv | O 0 mSv [ped] | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 7 | 7 |

| References | Study Quality |
|---|---|
| 105 (25814625) | 3 |
| 106 (20451693) | 2 |
| 86 (22772366) | 2 |
| 107 (20089517) | 3 |
| 109 (17885073) | 2 |
| 110 (20417446) | 1 |
| 112 (22499849) | 3 |
| 114 (21771988) | 4 |
| 115 (22720998) | 2 |
| 116 (22293447) | 2 |
| 117 (22035445) | 2 |
| 118 (29128863) | 3 |

| References | Study Quality |
|---|---|
| 113 (27855805) | 3 |
| 99 (26762873) | 2 |
| 87 (26607916) | 4 |
| 108 (25285584) | 3 |
| 84 (23470270) | 2 |
| 111 (23769489) | 3 |
| 68 (23602692) | 2 |
| 83 (24108563) | 4 |
| 97 (12821550) | 2 |
| 98 (23462786) | 2 |
| 100 (28189542) | 4 |
| 101 (24254478) | 4 |
| 102 (23500246) | 2 |
| 103 (21830182) | 4 |
| 104 (21245364) | 4 |
| 86 (22772366) | 2 |

| | |
|---|---|
| 107 (20089517) | 3 |
| 109 (17885073) | 2 |
| 110 (20417446) | 1 |
| 112 (22499849) | 3 |
| 114 (21771988) | 4 |
| 115 (22720998) | 2 |
| 116 (22293447) | 2 |
| 117 (22035445) | 2 |
| 118 (29128863) | 3 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| US echocardiography transthoracic resting | Usually appropriate | Strong | O 0 mSv | O 0 mSv [ped] | 8 | 8 | 0 | 0 | 0 | 1 | 1 | 0 | 4 | 2 | 7 |

| References | Study Quality |
|---|---|
| 121 (27798758) | 2 |
| 119 (24703918) | 4 |
| 122 (24400635) | 2 |
| 100 (28189542) | 4 |
| 120 (27338866) | 4 |
| 86 (22772366) | 2 |
| 95 (29850820) | 4 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CT heart function and morphology with IV contrast | May be appropriate | Limited | ☢☢☢☢ 10-30 mSv | ☢☢☢☢ 3-10 mSv [ped] | 5 | 5 | 1 | 0 | 0 | 1 | 7 | 2 | 3 | 1 | 0 |

| References | Study Quality |
|---|---|
| 127 (23992839) | 3 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CTA coronary arteries with IV contrast | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 3 | 3 | 5 | 2 | 2 | 3 | 2 | 1 | 0 | 0 | 0 |
| US echocardiography transthoracic stress | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 3 | 3 | 3 | 5 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| US echocardiography transesophageal | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 3 | 3 | 6 | 1 | 4 | 0 | 2 | 1 | 0 | 1 | 0 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CT chest with IV contrast | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 2 | 2 | 7 | 5 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |
| Arteriography coronary with ventriculography | Usually not appropriate | Limited | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 2 | 2 | 5 | 3 | 2 | 4 | 1 | 0 | 0 | 0 | 0 |
| | | References | | Study Quality | | | | | | | | | | | |
| | | 123 (20172912) | | 4 | | | | | | | | | | | |
| MRI chest without IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 2 | 2 | 7 | 4 | 3 | 0 | 0 | 0 | 0 | 1 | 0 |
| MRI heart with function and vasodilator stress perfusion without and with IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 2 | 2 | 8 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| FDG-PET/CT heart | Usually not appropriate | Limited | ☢☢☢☢ 10-30 mSv | ☢☢☢☢ 3-10 mSv [ped] | 2 | 2 | 7 | 1 | 4 | 1 | 2 | 0 | 0 | 0 | 0 |
| | | References | | Study Quality | | | | | | | | | | | |
| | | 96 (26272522) | | 3 | | | | | | | | | | | |
| CT coronary calcium | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | | 1 | 1 | 8 | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT chest without IV contrast | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 1 | 1 | 9 | 2 | 3 | 0 | 0 | 1 | 0 | 0 | 0 |
| CT chest without and with IV contrast | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 1 | 1 | 9 | 4 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| Arteriography coronary | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | | 1 | 1 | 9 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| MRI chest without and with IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 1 | 1 | 8 | 3 | 3 | 0 | 0 | 0 | 0 | 1 | 0 |
| MRI heart with function and inotropic stress without IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 1 | 1 | 11 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MRI heart with function and inotropic stress without and with IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 1 | 1 | 12 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |

**Variant 5: Suspected inflammatory cardiomyopathy. Ischemic cardiomyopathy already excluded. Initial imaging.**

| Procedure | Appropriateness Category | SOE | Adults RRL | Peds RRL | Rating | Median | Final Tabulations | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| MRI heart function and morphology without and with IV contrast | Usually appropriate | Strong | O 0 mSv | O 0 mSv [ped] | 9 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 8 |

| References | Study Quality |
|---|---|
| 143 (21907431) | 3 |
| 2 (27438188) | 4 |
| 141 (29158437) | 2 |
| 135 (26581396) | 2 |
| 142 (24461053) | 1 |
| 138 (23404383) | 2 |
| 137 (29885953) | 3 |
| 140 (17015795) | 2 |
| 115 (22720998) | 2 |
| 139 (30545455) | 4 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| US echocardiography transthoracic resting | Usually appropriate | Limited | O 0 mSv | O 0 mSv [ped] | 8 | 8 | 0 | 0 | 0 | 1 | 0 | 1 | 5 | 2 | 6 |

| References | Study Quality |
|---|---|
| 145 (27086044) | 2 |
| 144 (29306364) | 4 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MRI heart function and morphology without IV contrast | May be appropriate | Strong | O 0 mSv | O 0 mSv [ped] | 6 | 6 | 0 | 0 | 0 | 1 | 5 | 3 | 2 | 2 | 2 |

| References | Study Quality |
|---|---|
| 143 (21907431) | 3 |
| 2 (27438188) | 4 |

| | |
|---|---|
| 141 (29158437) | 2 |
| 135 (26581396) | 2 |
| 138 (23404383) | 2 |
| 137 (29885953) | 3 |
| 140 (17015795) | 2 |
| 115 (22720998) | 2 |
| 139 (30545455) | 4 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FDG-PET/CT heart | May be appropriate | Expert Consensus | ☢☢☢☢ 10-30 mSv | ☢☢☢☢ 3-10 mSv [ped] | 6 | 6 | 0 | 0 | 0 | 2 | 6 | 4 | 3 | 1 | 0 |
| CT heart function and morphology with IV contrast | May be appropriate | Limited | ☢☢☢☢ 10-30 mSv | ☢☢☢☢ 3-10 mSv [ped] | 5 | 5 | 0 | 0 | 2 | 3 | 6 | 4 | 0 | 0 | 0 |

| References | Study Quality |
|---|---|
| 136 (16953372) | 2 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CTA coronary arteries with IV contrast | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 3 | 3 | 4 | 1 | 3 | 1 | 5 | 1 | 0 | 0 | 0 |
| Arteriography coronary | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | | 2 | 2 | 7 | 5 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| Arteriography coronary with ventriculography | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 2 | 2 | 6 | 2 | 1 | 3 | 1 | 2 | 0 | 0 | 0 |
| MRI chest without IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 2 | 2 | 7 | 2 | 4 | 0 | 0 | 1 | 1 | 0 | 0 |
| MRI chest without and with IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 2 | 2 | 6 | 3 | 4 | 0 | 0 | 1 | 1 | 0 | 0 |
| US echocardiography transesophageal | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 2 | 2 | 7 | 1 | 3 | 1 | 1 | 1 | 0 | 1 | 0 |
| MRI heart with function and vasodilator stress perfusion without and with IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 2 | 2 | 6 | 8 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MRI heart with function and inotropic stress without IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 2 | 2 | 6 | 4 | 0 | 1 | 2 | 1 | 1 | 0 | 0 |
| MRI heart with function and inotropic stress without and with IV contrast | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 2 | 2 | 8 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| CT coronary calcium | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | | 1 | 1 | 9 | 2 | 3 | 1 | 0 | 0 | 0 | 0 | 0 |
| CT chest with IV contrast | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 1 | 1 | 8 | 0 | 3 | 0 | 2 | 2 | 0 | 0 | 0 |
| CT chest without IV contrast | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 1 | 1 | 8 | 1 | 1 | 1 | 3 | 1 | 0 | 0 | 0 |
| CT chest without and with IV contrast | Usually not appropriate | Expert Consensus | ☢☢☢ 1-10 mSv | ☢☢☢☢ 3-10 mSv [ped] | 1 | 1 | 8 | 2 | 3 | 0 | 1 | 1 | 0 | 0 | 0 |
| US echocardiography transthoracic stress | Usually not appropriate | Expert Consensus | O 0 mSv | O 0 mSv [ped] | 1 | 1 | 10 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |

**Appendix Key**

A more complete discussion of the items presented below can be found by accessing the supporting documents at the designated hyperlinks.

**Appropriateness Category**: The panel's recommendation for a procedure based on the assessment of the risks and benefits of performing the procedure for the specified clinical scenario.

**SOE**: Strength of Evidence. The assessment of the amount and quality of evidence found in the peer reviewed medical literature for an appropriateness recommendation.

- **References:** The citation number and PMID for the reference(s) associated with the recommendation.
- **Study Quality**: The assessment of the quality of an individual reference based on the number of study quality elements described in the reference.

**RRL**: Relative Radiation Level. A population based assessment of the amount of radiation a typical patient may be exposed to during the specified procedure.

**Rating**: The final rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

**Median**: The median rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

**Final tabulations:** A histogram showing the number of panel members who rated the procedure as noted in the column heading (ie, 1, 2, 3, etc.).

Additional supporting documents about the AC methodology and processes can be found at **www.acr.org/ac.**