American College of Radiology
ACR Appropriateness Criteria®

Asymptomatic Patient at Risk for Coronary Artery Disease

Variant 1:   **Asymptomatic patient. Low risk for coronary artery disease. Initial imaging.**

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CT coronary calcium	Usually not appropriate	Limited	☢☢☢ 1-10 mSv		3	3	0	0	0	0	0	0	0	0	0

References	Study Quality
15 (28283309)	4
14 (26841074)	3
16 (30935842)	4
17 (29153576)	3
18 (28196265)	3

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
US echocardiography transthoracic resting	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	0	0	0	0	0	0	0	0	0
CTA coronary arteries with IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0

References	Study Quality
19 (18652943)	4

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
MRA coronary arteries without IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0

References	Study Quality
21 (25916321)	4

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
MRA coronary arteries without and with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0

Procedure	Appropriateness	Study Quality / References	RRL (Adult)	RRL (Pediatric)											
		References 21 (25916321)		**Study Quality** 4											
MRI heart function and morphology without IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
		References 22 (27550660)		**Study Quality** 4											
MRI heart function and morphology without and with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
		References 22 (27550660)		**Study Quality** 4											
MRI heart function with stress without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
MRI heart function with stress without and with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
		References 22 (27550660)		**Study Quality** 4											
US echocardiography transthoracic stress	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
		References 20 (17719283)		**Study Quality** Good											
Radiography chest	Usually not appropriate	Expert Consensus	☢ <0.1 mSv	☢ <0.03 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
SPECT or SPECT/CT MPI rest and stress	Usually not appropriate	Limited	☢☢☢☢ 10-30 mSv	☢☢☢☢☢ 10-30 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
		References 23 (29200864)		**Study Quality** 4											

Variant 2: **Asymptomatic patient. Intermediate risk for coronary artery disease. Initial imaging.**

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CT coronary calcium	Usually appropriate	Limited	☢☢☢ 1-10 mSv		8	8	0	0	1	0	0	1	3	8	3

References	Study Quality
29 (20424251)	3
24 (12743005)	4
26 (17481445)	3
30 (20946997)	3
25 (12869688)	3
31 (26724526)	3
28 (25459592)	3
27 (22974805)	4
32 (22718782)	3
33 (29713929)	4
3 (30423393)	4

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CTA coronary arteries with IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	4	4	0	1	0	10	4	1	0	0	0

References	Study Quality
33 (29713929)	4

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
MRA coronary arteries without and with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	2	2	7	9	0	0	0	0	0	0	0

References	Study Quality
35 (27221073)	3
36 (23878103)	3

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
MRI heart function and morphology 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
US echocardiography transthoracic resting	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	8	3	3	0	1	0	0	1	0

Procedure	Appropriateness	Evidence	Adult RRL	Pediatric RRL			9	8	7	6	5	4	3	2	1
US echocardiography transthoracic stress	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	2	2	6	8	2	0	0	0	0	0	0

	References	Study Quality
	34 (18565214)	M

Procedure	Appropriateness	Evidence	Adult RRL	Pediatric RRL			9	8	7	6	5	4	3	2	1
SPECT or SPECT/CT MPI rest and stress	Usually not appropriate	Limited	☢☢☢ 10-30 mSv	☢☢☢☢☢ 10-30 mSv [ped]	2	2	5	6	4	1	0	0	0	0	0

	References	Study Quality
	38 (21181519)	4
	39 (24556531)	4

Procedure	Appropriateness	Evidence	Adult RRL	Pediatric RRL			9	8	7	6	5	4	3	2	1
MRA coronary arteries without IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	10	6	0	0	0	0	0	0	0

	References	Study Quality
	35 (27221073)	3
	36 (23878103)	3

Procedure	Appropriateness	Evidence	Adult RRL	Pediatric RRL			9	8	7	6	5	4	3	2	1
MRI heart function and morphology without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	6	1	0	0	0	0	0	0
MRI heart function with stress without IV contrast	Usually not appropriate	Moderate	O 0 mSv	O 0 mSv [ped]	1	1	9	6	1	0	0	0	0	0	0

	References	Study Quality
	37 (22390914)	2

Procedure	Appropriateness	Evidence	Adult RRL	Pediatric RRL			9	8	7	6	5	4	3	2	1
MRI heart function with stress without and with IV contrast	Usually not appropriate	Moderate	O 0 mSv	O 0 mSv [ped]	1	1	9	4	2	0	0	1	0	0	0

	References	Study Quality
	37 (22390914)	2

Procedure	Appropriateness	Evidence	Adult RRL	Pediatric RRL			9	8	7	6	5	4	3	2	1
Radiography chest	Usually not appropriate	Expert Consensus	☢ <0.1 mSv	☢ <0.03 mSv [ped]	1	1	11	3	0	0	1	0	1	0	0

Variant 3: Asymptomatic patient. High risk for coronary artery disease. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CTA coronary arteries with IV contrast	May be appropriate	Strong	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	6	6	0	0	0	1	6	7	2	0	0

References	Study Quality
43 (26754124)	2
42 (25205531)	2
46 (25402757)	3
45 (24468142)	2
48 (29778864)	3
44 (25332810)	2
47 (29604092)	2
49 (29685675)	Good

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
CT coronary calcium	May be appropriate	Limited	☢☢☢ 1-10 mSv		6	6	0	0	0	1	3	5	6	1	0

References	Study Quality
40 (19520336)	4
41 (21856482)	4

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
US echocardiography transthoracic resting	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	3	3	5	3	4	0	2	1	0	0	1
MRA coronary arteries without and with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	2	2	7	5	4	0	0	0	0	0	0

References	Study Quality
35 (27221073)	3
36 (23878103)	3

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
MRI heart function and morphology without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	8	5	2	1	0	0	0	0	0
MRI heart function and morphology without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	6	4	4	2	0	0	0	0	0

Procedure	Appropriateness	Rating	Adult RRL	Pediatric RRL											
MRI heart function with stress without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	7	5	1	1	2	0	0	0	0
MRI heart function with stress without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	5	4	1	2	4	0	0	0	0
US echocardiography transthoracic stress	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	2	2	6	8	2	0	0	0	0	0	0

References	Study Quality
20 (17719283)	Good

Procedure	Appropriateness	Rating	Adult RRL	Pediatric RRL											
SPECT or SPECT/CT MPI rest and stress	Usually not appropriate	Strong	☢☢☢☢ 10-30 mSv	☢☢☢☢☢ 10-30 mSv [ped]	2	2	5	4	3	0	4	0	0	0	0

References	Study Quality
51 (19366774)	2
52 (25240454)	1
38 (21181519)	4
50 (25596143)	Good
53 (26846937)	4

Procedure	Appropriateness	Rating	Adult RRL	Pediatric RRL											
MRA coronary arteries without IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	9	5	2	0	0	0	0	0	0

References	Study Quality
35 (27221073)	3
36 (23878103)	3

Procedure	Appropriateness	Rating	Adult RRL	Pediatric RRL											
Radiography chest	Usually not appropriate	Expert Consensus	☢ <0.1 mSv	☢ <0.03 mSv [ped]	1	1	10	1	2	1	0	1	0	1	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.**