American College of Radiology
ACR Appropriateness Criteria®

Preprocedural Chest or Cardiac Imaging for Cardiothoracic Surgery

Variant 1: Adult. Preprocedural chest or cardiac imaging for coronary cardiac surgery. No history of cardiothoracic surgery. Preprocedure planning.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Arteriography coronary	Usually appropriate	Expert Consensus	☢☢☢ 1-10 mSv		9	9	0	0	1	0	0	0	4	3	11
US echocardiography transthoracic resting	Usually appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	7	7	1	0	0	0	3	1	4	5	5
US echocardiography transesophageal	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	7	7	0	0	0	0	4	0	9	5	2

References	Study Quality
28 (8167285)	3
29 (20418689)	4

Radiography chest	Usually appropriate	Limited	☢ <0.1 mSv	☢ <0.03 mSv [ped]	7	7	0	0	0	0	8	1	6	1	4

References	Study Quality
20 (20478948)	4
27 (29477256)	4

CTA coronary arteries with IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	6	6	0	0	1	1	4	5	6	2	0

References	Study Quality
26 (35994043)	4
25 (30312411)	3

		23 (30586767)		4												
CT chest without IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	6	6	0	1	0	0	9	5	4	0	1	
		References		Study Quality												
		22 (37064355)		4												
		21 (20360209)		3												
		19 (26971418)		4												
		20 (20478948)		4												
CTA chest with IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	5	0	0	1	1	12	1	4	0	1	
		References		Study Quality												
		22 (37064355)		4												
		21 (20360209)		3												
		19 (26971418)		4												
		20 (20478948)		4												
CT chest with IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	5	0	0	2	1	13	2	2	0	0	
		References		Study Quality												
		22 (37064355)		4												
		21 (20360209)		3												
		19 (26971418)		4												
		20 (20478948)		4												
MRA coronary arteries without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	2	0	0	5	11	1	1	0	0	
		References		Study Quality												
		23 (30586767)		4												
		8 (38040460)		4												
MRA coronary arteries without and with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	2	0	0	4	10	2	2	0	0	
		References		Study Quality												

		23 (30586767)		4												
		8 (38040460)		4												
MRI heart function and morphology without IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	0	0	2	1	13	4	0	0	0
MRI heart function and morphology without and with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	3	12	2	2	1	0
		References		Study Quality												
		18 (32833510)		4												
CTA chest without and with IV contrast	May be appropriate	Expert Consensus	☢☢☢ 1-10 mSv		5	5	0	1	0	3	11	3	2	0	0
CT heart function and morphology with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	4	3	5	4	1	1	1	0	0
MRI chest with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	7	3	3	2	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	12	4	2	1	1	0	0	0	0
MRA chest without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	6	2	5	2	4	0	0	0	0
MRA chest without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	7	1	5	1	3	2	0	0	0
MRI chest without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	8	3	4	3	1	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	4	0	3	1	0	0	0
MRA chest with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	7	1	5	1	3	2	0	0	0

Variant 2: Adult. Preprocedural chest or cardiac imaging for coronary cardiac surgery. History of cardiothoracic surgery. Preprocedure planning.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Arteriography coronary	Usually appropriate	Expert Consensus	☢☢☢ 1-10 mSv		9	9	0	0	1	0	1	0	1	5	11
US echocardiography transthoracic resting	Usually appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	8	8	0	0	1	0	1	1	3	7	6
CTA chest with IV contrast	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	7	7	0	0	0	0	4	2	7	6	0

References	Study Quality
37 (22456649)	3
36 (20152230)	3
32 (25009210)	3
33 (18355503)	3
34 (19339275)	4
35 (21388987)	3
19 (26971418)	4
2 (31199672)	4
30 (19891233)	3
31 (23065095)	4

CT chest with IV contrast	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	7	7	0	0	2	0	6	2	8	1	1

References	Study Quality
37 (22456649)	3
36 (20152230)	3
32 (25009210)	3
33 (18355503)	3
34 (19339275)	4
35 (21388987)	3
19 (26971418)	4

		2 (31199672)		4												
		30 (19891233)		3												
		31 (23065095)		4												
CT chest without IV contrast	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	7	7	0	0	0	1	5	1	10	2	1	
		References		Study Quality												
		38 (25991392)		4												
		37 (22456649)		3												
		33 (18355503)		3												
		34 (19339275)		4												
		36 (20152230)		3												
		35 (21388987)		3												
		19 (26971418)		4												
		32 (25009210)		3												
		2 (31199672)		4												
		30 (19891233)		3												
		31 (23065095)		4												
US echocardiography transesophageal	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	7	7	0	0	1	0	0	1	13	4	1	
		References		Study Quality												
		29 (20418689)		4												
Radiography chest	Usually appropriate	Limited	☢ <0.1 mSv	☢ <0.03 mSv [ped]	7	7	0	0	0	0	5	1	9	1	4	
		References		Study Quality												
		20 (20478948)		4												
		27 (29477256)		4												
CTA chest without and with IV contrast	Usually appropriate	Limited	☢☢☢ 1-10 mSv		7	7	0	1	0	0	5	3	8	2	1	
		References		Study Quality												
		37 (22456649)		3												

36 (20152230)	3
32 (25009210)	3
33 (18355503)	3
34 (19339275)	4
35 (21388987)	3
19 (26971418)	4
2 (31199672)	4
30 (19891233)	3
31 (23065095)	4

CTA coronary arteries with IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	6	6	0	0	0	1	5	4	5	4	0

References	Study Quality
40 (37772419)	3
26 (35994043)	4
25 (30312411)	3
8 (38040460)	4
23 (30586767)	4

MRI heart function and morphology without and with IV contrast	May be appropriate	Expert Opinion	O 0 mSv	O 0 mSv [ped]	6	6	0	0	1	1	5	7	3	2	0

References	Study Quality
18 (32833510)	4
41 (19327524)	2

CT heart function and morphology with IV contrast	May be appropriate	Limited	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	5	5	0	0	0	2	13	4	1	0	0

References	Study Quality
39 (26897674)	4

MRA chest without IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	0	1	2	1	12	4	0	0	0
MRA chest without and with IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	0	1	2	2	10	5	0	0	0

MRA coronary arteries without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	2	12	2	4	0	0

References	Study Quality
8 (38040460)	4
23 (30586767)	4

MRA coronary arteries without and with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	2	11	3	4	0	0

References	Study Quality
8 (38040460)	4
23 (30586767)	4

MRI chest without IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	0	1	1	4	11	3	0	0	0
MRI chest without and with IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	0	1	1	3	12	3	0	0	0
MRI heart function and morphology without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	1	0	3	11	5	0	0	0

References	Study Quality
41 (19327524)	2

MRA chest with IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	0	1	1	3	10	5	0	0	0
MRI chest with IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	0	1	1	3	12	3	0	0	0
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	10	4	3	1	0	1	0	0	1

Variant 3: Adult. Preprocedural chest or cardiac imaging prior to noncoronary cardiac surgery. No history of cardiothoracic surgery. Preprocedure planning.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9

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	Expert Consensus	O 0 mSv	O 0 mSv [ped]	8	8	0	0	1	0	3	0	3	7	5
Arteriography coronary	Usually appropriate	Expert Consensus	☢☢☢ 1-10 mSv		7	7	0	0	1	0	6	3	6	3	1
US echocardiography transesophageal	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	7	7	0	0	1	0	5	0	6	4	3

References	Study Quality
28 (8167285)	3
29 (20418689)	4

Radiography chest	Usually appropriate	Limited	☢ <0.1 mSv	☢ <0.03 mSv [ped]	7	7	0	0	0	0	4	4	6	2	4

References	Study Quality
20 (20478948)	4
27 (29477256)	4

CTA chest with IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	6	6	0	0	0	1	6	7	3	2	0

References	Study Quality
21 (20360209)	3
20 (20478948)	4
19 (26971418)	4

CTA coronary arteries with IV contrast	May be appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	6	6	1	0	0	1	4	5	3	3	2
CT chest with IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	6	6	0	0	0	2	8	6	2	2	0

References	Study Quality
22 (37064355)	4
21 (20360209)	3

		19 (26971418)		4												
		20 (20478948)		4												
CT chest without IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	6	6	0	0	0	1	7	7	3	2	0
		References		Study Quality												
		21 (20360209)		3												
		20 (20478948)		4												
		19 (26971418)		4												
MRI heart function and morphology without and with IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	6	6	1	0	0	3	5	6	4	1	0
MRA chest without IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	0	1	0	2	16	1	0	0	0
MRA chest without and with IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	0	1	0	3	15	1	0	0	0
MRI heart function and morphology without IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	2	12	5	1	0	0
MRA chest with IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	0	1	0	3	15	1	0	0	0
CTA chest without and with IV contrast	May be appropriate	Expert Consensus	☢☢☢ 1-10 mSv		5	5	0	1	1	1	11	6	0	0	0
MRA coronary arteries without IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	4	4	4	2	4	5	4	0	1	0	0
MRA coronary arteries without and with IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	4	4	4	3	3	5	4	0	1	0	0
CT heart function and morphology with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	3	3	5	2	4	0	7	1	1	0	0
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	9	4	4	1	1	0	0	1	0

MRI chest without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	7	4	2	2	2	2	0	0	0
MRI chest without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	7	3	3	0	4	0	2	0	0
MRI chest with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	6	8	5	0	0	1	0	0	0

Variant 4: Adult. Preprocedural chest or cardiac imaging for noncoronary cardiac surgery. History of cardiothoracic surgery. Preprocedure planning.

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	Expert Consensus	O 0 mSv	O 0 mSv [ped]	8	8	0	0	1	0	2	1	2	8	5
US echocardiography transesophageal	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	8	8	0	0	1	0	4	2	2	7	3

References	Study Quality
28 (8167285)	3
29 (20418689)	4

CT chest with IV contrast	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	7	7	0	0	0	2	3	2	10	2	1

References	Study Quality
37 (22456649)	3
36 (20152230)	3
32 (25009210)	3
33 (18355503)	3
34 (19339275)	4
35 (21388987)	3
19 (26971418)	4
2 (31199672)	4
30 (19891233)	3

		31 (23065095)		4													
CT chest without IV contrast	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	7	7	0	0	1	0	3	4	9	2	1		
		References		Study Quality													
		38 (25991392)		4													
		37 (22456649)		3													
		33 (18355503)		3													
		34 (19339275)		4													
		36 (20152230)		3													
		35 (21388987)		3													
		19 (26971418)		4													
		32 (25009210)		3													
		2 (31199672)		4													
		30 (19891233)		3													
		31 (23065095)		4													
Radiography chest	Usually appropriate	Limited	☢ <0.1 mSv	☢ <0.03 mSv [ped]	7	7	0	0	0	1	3	3	7	3	3		
		References		Study Quality													
		20 (20478948)		4													
		27 (29477256)		4													
CTA chest with IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	6	6	0	0	0	1	2	6	6	3	1		
		References		Study Quality													
		37 (22456649)		3													
		36 (20152230)		3													
		32 (25009210)		3													
		33 (18355503)		3													
		34 (19339275)		4													
		35 (21388987)		3													
		19 (26971418)		4													

		2 (31199672)		4												
		30 (19891233)		3												
		31 (23065095)		4												
CTA coronary arteries with IV contrast	May be appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	6	6	0	1	0	0	5	5	3	3	2
CT heart function and morphology with IV contrast	May be appropriate	Limited	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	6	6	0	0	1	0	8	7	4	0	0
		References		Study Quality												
		39 (26897674)		4												
Arteriography coronary	May be appropriate	Expert Consensus	☢☢☢ 1-10 mSv		6	6	1	0	1	0	4	4	2	5	2
MRI heart function and morphology without and with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	2	7	7	3	1	0
		References		Study Quality												
		41 (19327524)		2												
MRA chest without IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	0	1	0	4	12	3	0	0	0
MRA chest without and with IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	0	1	0	4	12	3	0	0	0
MRI heart function and morphology without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	1	2	11	2	4	0	0
		References		Study Quality												
		41 (19327524)		2												
MRA chest with IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	0	1	0	3	13	3	0	0	0
CTA chest without and with IV contrast	May be appropriate (Disagreement)	Expert Opinion	☢☢☢ 1-10 mSv		5	5	0	2	0	1	6	2	8	0	1
		References		Study Quality												
		37 (22456649)		3												

36 (20152230)	3
32 (25009210)	3
33 (18355503)	3
34 (19339275)	4
35 (21388987)	3
19 (26971418)	4
2 (31199672)	4
30 (19891233)	3
31 (23065095)	4

MRI chest without IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	4	4	4	3	3	2	7	1	0	0	0
MRI chest without and with IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	4	4	4	3	3	1	8	1	0	0	0
MRI chest with IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	4	4	3	3	4	2	7	1	0	0	0
MRA coronary arteries without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	3	3	6	1	6	1	3	1	1	0	0
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	8	4	1	2	3	0	2	0	0
MRA coronary arteries without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	6	3	5	1	3	1	0	0	0

Variant 5: Adult. Preprocedural chest or cardiac imaging for thoracic surgery. No history of cardiothoracic surgery. Preprocedure planning.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CT chest with IV contrast	Usually appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	7	7	0	0	0	1	1	2	6	7	2

CT chest without IV contrast	Usually appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	7	7	0	0	0	2	5	2	6	3	1
Radiography chest	Usually appropriate	Expert Opinion	☢ <0.1 mSv	☢ <0.03 mSv [ped]	7	7	0	0	2	0	4	0	3	4	6
		References		Study Quality											
		46 (8269561)		M											
CTA chest with IV contrast	May be appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	6	6	0	0	1	1	6	4	3	3	1
MRA chest without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	2	2	2	13	0	1	0	0
		References		Study Quality											
		14 (33958117)		4											
MRA chest without and with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	1	1	3	12	1	2	0	0
		References		Study Quality											
		14 (33958117)		4											
MRI chest without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	1	2	2	13	1	1	0	0
		References		Study Quality											
		14 (33958117)		4											
MRI chest without and with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	2	2	12	2	2	0	0
		References		Study Quality											
		14 (33958117)		4											
MRI heart function and morphology without IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	5	12	3	0	0	0
MRI heart function and morphology without and with IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	3	14	3	0	0	0

US echocardiography transthoracic resting	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	2	9	5	2	2	0
US echocardiography transesophageal	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	3	13	3	1	0	0
MRA chest with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	2	0	1	15	0	2	0	0
		References		Study Quality											
		14 (33958117)		4											
CTA chest without and with IV contrast	May be appropriate	Expert Consensus	☢☢☢ 1-10 mSv		5	5	0	1	0	2	9	6	2	0	0
MRI chest with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	4	12	4	0	0	0
		References		Study Quality											
		14 (33958117)		4											
CTA coronary arteries with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	3	3	4	1	8	2	4	0	0	1	0
CT heart function and morphology with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	3	3	7	2	3	3	3	1	0	0	0
Arteriography coronary	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv		3	3	4	4	7	2	2	1	0	0	0
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	8	4	5	2	0	0	1	0	0
MRA coronary arteries without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	3	2	1	4	0	0	0	0
MRA coronary arteries without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	1	4	1	3	0	1	0	0

Variant 6: Adult. Preprocedural chest or cardiac imaging for thoracic surgery. History of cardiothoracic surgery. Preprocedure planning.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CT chest with IV contrast	Usually appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	7	7	0	0	0	1	1	3	5	6	3
CT chest without IV contrast	Usually appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	7	7	0	0	1	1	2	3	11	2	0
Radiography chest	Usually appropriate	Limited	☢ <0.1 mSv	☢ <0.03 mSv [ped]	7	7	0	0	0	1	1	2	7	5	4
		References		Study Quality											
		46 (8269561)		M											
CTA chest with IV contrast	May be appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	6	6	0	0	0	2	4	4	6	2	1
US echocardiography transthoracic resting	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	3	6	6	3	1	1
CT heart function and morphology with IV contrast	May be appropriate	Limited	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	5	5	0	0	3	3	11	2	1	0	0
		References		Study Quality											
		39 (26897674)		4											
MRA chest without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	3	14	3	0	0	0
		References		Study Quality											
		14 (33958117)		4											
MRA chest without and with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	3	14	3	0	0	0
		References		Study Quality											
		14 (33958117)		4											

MRI chest without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	1	1	4	12	1	1	0	0
	References			Study Quality											
	14 (33958117)			4											
MRI chest without and with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	1	4	10	3	2	0	0
	References			Study Quality											
	14 (33958117)			4											
MRI heart function and morphology without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	1	1	0	7	8	3	0	0	0
	References			Study Quality											
	41 (19327524)			2											
MRI heart function and morphology without and with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	1	0	1	2	10	5	1	0	0
	References			Study Quality											
	41 (19327524)			2											
US chest	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	3	12	2	2	1	0
	References			Study Quality											
	49 (21442577)			2											
	48 (22518039)			2											
	47 (31366513)			4											
US echocardiography transesophageal	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	1	0	0	6	8	3	2	0	0
MRA chest with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	3	14	3	0	0	0
	References			Study Quality											
	14 (33958117)			4											
CTA chest without and with IV contrast	May be appropriate	Expert Consensus	☢☢☢ 1-10 mSv		5	5	0	0	0	2	9	6	3	0	0

MRI chest with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	1	1	3	11	2	2	0	0
		References		Study Quality											
		14 (33958117)		4											
CTA coronary arteries with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	3	3	4	3	7	2	3	1	0	0	0
Arteriography coronary	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv		3	3	5	0	8	3	2	2	0	0	0
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	8	4	6	1	0	0	1	0	0
MRA coronary arteries without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	7	2	5	1	4	0	0	0	0
MRA coronary arteries without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	7	2	4	1	5	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.**