American College of Radiology
ACR Appropriateness Criteria®

Preprocedural Planning for Transcatheter Aortic Valve Replacement

Variant 1: Preintervention planning for transcatheter aortic valve replacement: assessment of aortic root. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CT heart function and morphology with IV contrast	Usually appropriate	Strong	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	9	9	0	0	0	0	0	1	0	1	14

References	Study Quality
15 (23684679)	2
22 (24947721)	3
24 (23954337)	3
41 (25147034)	3
39 (26239964)	4
42 (32306158)	3
40 (30017282)	3
44 (34658340)	2
43 (26164109)	2

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

References	Study Quality
48 (29736853)	1
51 (28570260)	1
49 (32318849)	1
50 (26395021)	1
52 (32536342)	Good

Procedure	Appropriateness	Evidence	Adult RRL	Pediatric RRL	Panel Rating (median)		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]	7	7	0	0	0	1	3	2	3	6	1

References	Study Quality
48 (29736853)	1
51 (28570260)	1
49 (32318849)	1
50 (26395021)	1
52 (32536342)	Good

Procedure	Appropriateness	Evidence	Adult RRL	Pediatric RRL	Panel Rating		1	2	3	4	5	6	7	8	9
US echocardiography transesophageal	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	7	7	0	0	0	0	5	1	10	1	0

References	Study Quality
55 (31549579)	Good
53 (29625649)	2
54 (26320167)	2

Procedure	Appropriateness	Evidence	Adult RRL	Pediatric RRL	Panel Rating		1	2	3	4	5	6	7	8	9
MRA chest with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	3	5	9	0	0	0

References	Study Quality
45 (31489471)	4

Procedure	Appropriateness	Evidence	Adult RRL	Pediatric RRL	Panel Rating		1	2	3	4	5	6	7	8	9
CTA chest with IV contrast	May be appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	5	0	1	1	2	10	2	0	0	1
CTA coronary arteries with IV contrast	May be appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	5	0	0	0	0	10	5	1	0	1
MRA chest without and with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	3	10	4	0	0	0

References	Study Quality
46 (26219296)	1
47 (26911969)	4

Procedure	Appropriateness	Evidence	Adult RRL	Pediatric RRL	Panel Rating		1	2	3	4	5	6	7	8	9
CT chest with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	7	4	2	0	1	1	1	0	0

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT chest without IV contrast	Usually not appropriate	Moderate	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	8	1	2	3	1	1	0	0	0

	References	Study Quality
	38 (26784328)	2

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	7	3	3	0	1	1	0	1	0
MRA coronary arteries without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	8	5	3	0	0	0	0	0	1
MRA coronary arteries without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	8	4	4	0	0	1	0	0	0
US echocardiography transthoracic resting	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	6	4	2	1	2	1	1	0	0
Aortography chest	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv		1	1	14	3	0	0	0	0	0	0	0

Variant 2:   Preintervention planning for transcatheter aortic valve replacement: assessment of supravalvular aorta and vascular access. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CTA chest abdomen pelvis with IV contrast	Usually appropriate	Limited	☢☢☢☢☢ 30-100 mSv	☢☢☢☢☢ 10-30 mSv [ped]	9	9	0	0	0	0	0	0	0	2	14

	References	Study Quality
	23 (25552490)	3
	58 (28063810)	4
	59 (33432599)	3
	60 (29130612)	3

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CTA abdomen and pelvis with IV contrast	Usually appropriate	Limited	☢☢☢☢ 10-30 mSv		8	8	0	0	0	0	0	1	5	8	3

References	Study Quality
57 (31732445)	3

Procedure	Appropriateness	Evidence	RRL (adult)	RRL (ped)											
CTA chest with IV contrast	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	8	8	0	0	0	0	0	0	8	5	4

References	Study Quality
61 (29100645)	3
49 (32318849)	1
60 (29130612)	3

Procedure	Appropriateness	Evidence	RRL (adult)	RRL (ped)											
MRA abdomen and pelvis without and with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	1	4	8	3	1	0

References	Study Quality
48 (29736853)	1

Procedure	Appropriateness	Evidence	RRL (adult)	RRL (ped)											
MRA chest without and with IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	0	6	8	3	0	0
MRA chest abdomen pelvis with IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	0	6	8	1	2	0
MRA abdomen and pelvis without IV contrast	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	2	9	4	2	0	0

References	Study Quality
49 (32318849)	1
62 (28549023)	1

Procedure	Appropriateness	Evidence	RRL (adult)	RRL (ped)											
US intravascular aorta and iliofemoral system	May be appropriate (Disagreement)	Expert Opinion	O 0 mSv	O 0 mSv [ped]	5	5	0	3	2	3	6	3	0	0	0

References	Study Quality
63 (27922808)	1

Procedure	Appropriateness	Evidence	RRL (adult)	RRL (ped)											
CT abdomen and pelvis with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	3	3	5	1	3	3	2	1	0	1	0
CT abdomen and pelvis without IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	3	3	4	3	3	5	0	1	0	0	0

	References	Study Quality											
	23 (25552490)	3											
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv	☢☢☢☢☢ 10-30 mSv [ped]	3	3	7	0	2	3	3	0	0	1	0
CT chest with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	3	3	7	1	1	3	4	0	0	0	0
CT chest without IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	3	3	6	2	3	4	0	1	0	0	0

	References	Study Quality											
	56 (23195040)	3											
CT chest abdomen pelvis without IV contrast	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	3	3	3	2	4	3	2	1	1	0	0
US duplex Doppler chest abdomen pelvis	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	3	3	6	2	4	2	1	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	7	2	0	2	3	1	0	1	0
CT chest abdomen pelvis with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	7	3	3	2	1	0	1	0	0
CT chest abdomen pelvis without and with IV contrast	Usually not appropriate	Moderate	☢☢☢☢ 10-30 mSv	☢☢☢☢☢ 10-30 mSv [ped]	2	2	7	4	3	1	1	0	1	0	0

	References	Study Quality											
	38 (26784328)	2											
CT heart function and morphology with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	8	2	6	0	0	1	0	0	0
US echocardiography transthoracic resting	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	15	2	0	0	0	0	0	0	0

US echocardiography transesophageal	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	0	5	0	0	0	0	2	0
Aortography chest abdomen pelvis	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv		1	1	11	3	2	0	1	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.**