

**American College of Radiology  
ACR Appropriateness Criteria®**

**Thoracic Aortic Aneurysm or Dissection-Treatment Planning and Follow-Up**

**Variant 1: Adult. Known thoracic aortic aneurysm or dissection without repair. With or without symptoms. Follow-up 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	Strong	⊕⊕⊕⊕⊕ 30-100 mSv	⊕⊕⊕⊕⊕ 10-30 mSv [ped]	9	9	0	0	1	0	0	1	2	4	12

References	Study Quality
44 (28701057)	4
43 (10567317)	3
42 (25415694)	2
41 (23958070)	4
40 (34655311)	2
39 (31257995)	3
38 (20395874)	4
37 (19001643)	4
36 (24220116)	4
34 (24267718)	4
27 (21723533)	4
20 (24560244)	2
5 (26916280)	4
1 (23701088)	4
35 (31264015)	3

CTA chest with IV contrast	Usually appropriate	Strong	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	7	7	0	1	0	0	2	3	8	3	3
----------------------------	---------------------	--------	--------------	---------------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
43 (10567317)	3
42 (25415694)	2
41 (23958070)	4
40 (34655311)	2
39 (31257995)	3
38 (20395874)	4
37 (19001643)	4
36 (24220116)	4
34 (24267718)	4
27 (21723533)	4
5 (26916280)	4
1 (23701088)	4
35 (31264015)	3

MRA chest abdomen pelvis without IV contrast	Usually appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	7	7	0	0	1	0	2	4	8	5	0
--	---------------------	--------	---------	---------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
1 (23701088)	4
53 (27776656)	3
52 (30664117)	2
51 (29084542)	2
50 (32852711)	3
48 (32251236)	3

MRA chest abdomen pelvis with IV contrast	Usually appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	7	7	0	0	0	0	0	4	9	4	3
---	---------------------	--------	---------	---------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
49 (27894786)	4
48 (32251236)	3
47 (28905233)	2

			46 (33409772)		1													
			45 (32506262)		3													
			36 (24220116)		4													
MRA chest without IV contrast	May be appropriate	Strong	0 0 mSv	0 0 mSv [ped]	6	6	0	0	1	2	7	2	6	2	0			
			References		Study Quality													
			1 (23701088)		4													
			53 (27776656)		3													
			52 (30664117)		2													
			51 (29084542)		2													
			50 (32852711)		3													
			48 (32251236)		3													
MRA chest with IV contrast	May be appropriate	Strong	0 0 mSv	0 0 mSv [ped]	6	6	0	0	0	0	5	7	5	2	1			
			References		Study Quality													
			49 (27894786)		4													
			48 (32251236)		3													
			47 (28905233)		2													
			46 (33409772)		1													
			45 (32506262)		3													
			36 (24220116)		4													
CT chest with IV contrast	May be appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	5	5	0	0	0	8	6	2	0	0	0			
			References		Study Quality													
			34 (24267718)		4													
			33 (28723768)		3													
			32 (28078377)		4													
			31 (32198657)		4													
CT chest abdomen pelvis with IV contrast	May be appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	5	5	0	0	0	2	9	4	1	0	0			

References	Study Quality
34 (24267718)	4
33 (28723768)	3
32 (28078377)	4
31 (32198657)	4

CT chest abdomen pelvis without and with IV contrast	May be appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼☼ 10-30 mSv [ped]	5	5	0	0	1	3	7	4	1	0	0
--	--------------------	---------	----------------	-----------------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
5 (26916280)	4
34 (24267718)	4
33 (28723768)	3
32 (28078377)	4
31 (32198657)	4
35 (31264015)	3

US echocardiography transthoracic resting	May be appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	5	5	0	1	2	1	9	3	0	0	0
---	--------------------	---------	---------	---------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
1 (23701088)	4
5 (26916280)	4
55 (29927868)	1
54 (29398308)	3
48 (32251236)	3
28 (27060285)	4

US echocardiography transesophageal	May be appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	5	5	0	0	2	2	11	0	1	0	0
-------------------------------------	--------------------	---------	---------	---------------	---	---	---	---	---	---	----	---	---	---	---

References	Study Quality
5 (26916280)	4

CT chest without and with IV contrast	May be appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼☼ 3-10 mSv [ped]	4	4	0	0	1	8	5	2	0	0	0
---------------------------------------	--------------------	---------	--------------	----------------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
5 (26916280)	4
34 (24267718)	4
33 (28723768)	3
32 (28078377)	4
31 (32198657)	4
35 (31264015)	3

CT chest abdomen pelvis without IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕⊕ 10-30 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	3	3	1	3	9	3	2	2	0	0	0
CT chest without IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	2	2	4	7	4	1	3	1	0	0	0
Aortography chest abdomen pelvis	Usually not appropriate	Expert Consensus	⊕⊕⊕⊕ 10-30 mSv		2	2	9	8	1	0	1	0	0	0	1
Radiography chest	Usually not appropriate	Expert Consensus	⊕ <0.1 mSv	⊕ <0.03 mSv [ped]	1	1	12	3	4	0	1	0	0	0	0

**Variant 2: Adult. Prethoracic endovascular repair or open repair of thoracic aorta aneurysm or dissection. Preprocedure planning.**

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	Strong	⊕⊕⊕⊕⊕ 30-100 mSv	⊕⊕⊕⊕⊕ 10-30 mSv [ped]	9	9	0	0	0	0	0	1	0	5	14

References	Study Quality
1 (23701088)	4
67 (29156021)	2
66 (24139983)	2
65 (24820894)	2
64 (22109332)	2

63 (22305684)	4
61 (26070621)	4
41 (23958070)	4
40 (34655311)	2
37 (19001643)	4

MRA chest abdomen pelvis with IV contrast	Usually appropriate	Strong	0 0 mSv	0 0 mSv [ped]	8	8	1	0	1	0	0	2	5	9	2
---	---------------------	--------	---------	---------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
48 (32251236)	3
47 (28905233)	2
46 (33409772)	1
45 (32506262)	3

CTA chest with IV contrast	May be appropriate	Strong	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	6	6	0	0	0	2	4	3	5	2	0
----------------------------	--------------------	--------	--------------	---------------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
1 (23701088)	4
67 (29156021)	2
66 (24139983)	2
65 (24820894)	2
64 (22109332)	2
63 (22305684)	4
61 (26070621)	4
41 (23958070)	4
40 (34655311)	2
37 (19001643)	4

CT chest abdomen pelvis with IV contrast	May be appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	6	6	0	0	0	1	5	8	2	0	0
--	--------------------	---------	----------------	---------------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
34 (24267718)	4

CT chest abdomen pelvis without and with IV contrast	May be appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼☼ 10-30 mSv [ped]	6	6	0	0	0	1	7	7	1	0	0
		References	Study Quality												
		34 (24267718)	4												
CT chest with IV contrast	May be appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	5	5	0	0	1	6	7	2	0	0	0
		References	Study Quality												
		34 (24267718)	4												
		61 (26070621)	4												
CT chest without and with IV contrast	May be appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	5	5	0	0	1	4	8	3	0	0	0
		References	Study Quality												
		34 (24267718)	4												
		61 (26070621)	4												
MRA chest without IV contrast	May be appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	5	5	1	1	1	3	9	1	0	0	0
		References	Study Quality												
		1 (23701088)	4												
		68 (33557887)	1												
		52 (30664117)	2												
		51 (29084542)	2												
		50 (32852711)	3												
		48 (32251236)	3												
		61 (26070621)	4												
MRA chest abdomen pelvis without IV contrast	May be appropriate (Disagreement)	Expert Opinion	○ 0 mSv	○ 0 mSv [ped]	5	5	1	0	1	1	0	0	10	2	1
		References	Study Quality												
		1 (23701088)	4												
		68 (33557887)	1												

			52 (30664117)		2													
			51 (29084542)		2													
			50 (32852711)		3													
			48 (32251236)		3													
MRA chest with IV contrast	May be appropriate	Strong	0 0 mSv	0 0 mSv [ped]	5	5	1	0	1	2	6	6	0	0	0			
			References		Study Quality													
			61 (26070621)		4													
			48 (32251236)		3													
			47 (28905233)		2													
			46 (33409772)		1													
			45 (32506262)		3													
US echocardiography transthoracic resting	Usually not appropriate	Limited	0 0 mSv	0 0 mSv [ped]	3	3	3	1	8	3	1	0	0	0	0			
			References		Study Quality													
			1 (23701088)		4													
			5 (26916280)		4													
			28 (27060285)		4													
			54 (29398308)		3													
US echocardiography transesophageal	Usually not appropriate	Limited	0 0 mSv	0 0 mSv [ped]	3	3	2	2	7	3	1	1	0	0	0			
			References		Study Quality													
			5 (26916280)		4													
			70 (25684644)		3													
			69 (8837572)		3													
CT chest without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	8	7	1	3	0	1	0	0	0			
CT chest abdomen pelvis without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	7	6	3	2	0	2	0	0	0			



US duplex Doppler iliofemoral arteries	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	9	6	0	3	1	0	1	0	0
Aortography chest abdomen pelvis	Usually not appropriate	Limited	☼☼☼☼ 10-30 mSv		2	2	3	8	3	0	2	0	0	0	0
		References	Study Quality												
		62 (24085324)	2												
US duplex Doppler aorta abdomen	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	12	3	1	2	1	1	0	0	0

**Variant 3: Adult. Postthoracic endovascular repair of thoracic aortic aneurysm or dissection. Follow-up 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	Strong	☼☼☼☼☼ 30-100 mSv	☼☼☼☼☼ 10-30 mSv [ped]	9	9	0	0	0	0	0	1	2	4	10
		References	Study Quality												
		88 (29097043)	2												
		87 (28369453)	3												
		86 (25282168)	4												
		85 (24571939)	2												
		84 (24816512)	3												
		83 (23345371)	3												
		82 (28341530)	3												
		81 (23830947)	2												
		80 (25173654)	4												
		74 (32891743)	2												
		37 (19001643)	4												
		23 (34233714)	2												
		22 (26787656)	2												



CT chest with IV contrast	May be appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	5	5	0	0	0	3	12	1	0	0	0
			References		Study Quality										
			34 (24267718)		4										
			33 (28723768)		3										
			32 (28078377)		4										
			31 (32198657)		4										
CT chest without and with IV contrast	May be appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	5	5	0	2	3	3	5	3	1	0	0
			References		Study Quality										
			33 (28723768)		3										
			32 (28078377)		4										
			31 (32198657)		4										
CT chest abdomen pelvis with IV contrast	May be appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	5	5	0	0	0	1	10	3	2	0	0
			References		Study Quality										
			34 (24267718)		4										
			33 (28723768)		3										
			32 (28078377)		4										
			31 (32198657)		4										
CT chest abdomen pelvis without IV contrast	May be appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	5	5	0	0	1	4	10	1	0	0	0
			References		Study Quality										
			34 (24267718)		4										
			36 (24220116)		4										
			79 (19703867)		3										
CT chest abdomen pelvis without and with IV contrast	May be appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼☼ 10-30 mSv [ped]	5	5	0	0	1	2	7	3	3	0	0

References	Study Quality
34 (24267718)	4
33 (28723768)	3
32 (28078377)	4
31 (32198657)	4

MRA chest without IV contrast	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	5	5	0	0	1	1	12	2	0	0	0
-------------------------------	--------------------	---------	---------	---------------	---	---	---	---	---	---	----	---	---	---	---

References	Study Quality
89 (11042644)	4
90 (10470877)	4
2 (25170271)	4
93 (22588711)	3

MRA chest abdomen pelvis without IV contrast	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	5	5	0	0	0	1	10	5	0	0	0
--	--------------------	---------	---------	---------------	---	---	---	---	---	---	----	---	---	---	---

References	Study Quality
89 (11042644)	4
90 (10470877)	4
2 (25170271)	4
93 (22588711)	3

MRA chest with IV contrast	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	5	5	0	1	1	0	7	3	4	1	0
----------------------------	--------------------	---------	---------	---------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
92 (21331596)	3
91 (12835978)	3
90 (10470877)	4
89 (11042644)	4

CT chest without IV contrast	May be appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	4	4	0	0	4	7	4	1	0	0	0
------------------------------	--------------------	---------	--------------	---------------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
34 (24267718)	4

			36 (24220116)			4											
			79 (19703867)			3											
US echocardiography transthoracic resting	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	7	6	1	0	2	0	1	0	0		
Radiography chest	Usually not appropriate	Expert Consensus	⊕ <0.1 mSv	⊕ <0.03 mSv [ped]	2	2	5	7	4	1	3	0	0	0	0		
Aortography chest abdomen pelvis	Usually not appropriate	Expert Consensus	⊕⊕⊕⊕ 10-30 mSv		2	2	7	5	2	3	2	0	1	0	0		
US duplex Doppler aorta abdomen	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	11	3	2	0	1	0	0	0	0		
		References			Study Quality												
			73 (31303063)			4											
US echocardiography transesophageal	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	9	3	2	0	2	0	1	0	0		

**Variant 4: Adult. Postopen repair of thoracic aortic aneurysm or dissection. Follow-up 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	Strong	⊕⊕⊕⊕⊕ 30-100 mSv	⊕⊕⊕⊕⊕ 10-30 mSv [ped]	9	9	0	0	0	0	0	3	2	2	10		
		References			Study Quality												
			38 (20395874)			4											
			37 (19001643)			4											
			36 (24220116)			4											
			34 (24267718)			4											
			27 (21723533)			4											
			1 (23701088)			4											
			40 (34655311)			2											

41 (23958070)	4
80 (25173654)	4
24 (23322828)	4
94 (27771318)	4
95 (24656670)	2
96 (27111499)	2

CTA chest with IV contrast	Usually appropriate	Strong	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	7	7	0	0	1	0	3	4	4	2	3
----------------------------	---------------------	--------	--------------	---------------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
4 (28475566)	2
34 (24267718)	4
36 (24220116)	4
27 (21723533)	4
37 (19001643)	4
38 (20395874)	4
40 (34655311)	2
41 (23958070)	4
1 (23701088)	4
80 (25173654)	4
24 (23322828)	4
94 (27771318)	4
95 (24656670)	2
96 (27111499)	2

MRA chest abdomen pelvis with IV contrast	Usually appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	7	7	0	0	0	0	2	3	6	5	1
---	---------------------	---------	---------	---------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
97 (25623219)	4
98 (32772927)	3

CT chest abdomen pelvis with IV contrast	May be appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	6	6	0	0	0	2	5	6	2	1	0
--	--------------------	---------	----------------	---------------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
34 (24267718)	4
31 (32198657)	4
32 (28078377)	4
33 (28723768)	3

MRA chest abdomen pelvis without IV contrast	May be appropriate	Strong	0 0 mSv	0 0 mSv [ped]	6	6	0	0	1	1	4	3	6	2	0
--	--------------------	--------	---------	---------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
1 (23701088)	4
50 (32852711)	3
51 (29084542)	2
68 (33557887)	1
52 (30664117)	2
99 (35000609)	1
48 (32251236)	3

MRA chest with IV contrast	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	6	6	0	0	1	1	3	4	7	1	0
----------------------------	--------------------	---------	---------	---------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
97 (25623219)	4
98 (32772927)	3

CT chest with IV contrast	May be appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	5	5	0	0	0	2	10	4	0	0	0
---------------------------	--------------------	---------	--------------	---------------------	---	---	---	---	---	---	----	---	---	---	---

References	Study Quality
34 (24267718)	4
6 (28833419)	4

CT chest without and with IV contrast	May be appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	5	5	0	0	2	5	7	2	0	0	0
---------------------------------------	--------------------	---------	--------------	---------------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
4 (28475566)	2
34 (24267718)	4

CT chest abdomen pelvis without and with IV contrast	May be appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼☼ 10-30 mSv [ped]	5	5	0	0	0	2	9	2	2	1	0
		References	Study Quality												
		34 (24267718)	4												
		31 (32198657)	4												
		32 (28078377)	4												
		33 (28723768)	3												
MRA chest without IV contrast	May be appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	5	5	0	0	0	3	10	3	0	0	0
		References	Study Quality												
		1 (23701088)	4												
		99 (35000609)	1												
		68 (33557887)	1												
		52 (30664117)	2												
		51 (29084542)	2												
		50 (32852711)	3												
		48 (32251236)	3												
CT chest abdomen pelvis without IV contrast	May be appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv	☼☼☼☼☼ 3-10 mSv [ped]	4	4	3	3	2	3	4	2	0	0	0
CT chest without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼☼ 3-10 mSv [ped]	3	3	2	3	7	3	1	0	0	0	0
US duplex Doppler aorta abdomen	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	13	3	0	1	0	0	0	0	0
US echocardiography transthoracic resting	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	9	2	0	1	4	0	0	1	0
US echocardiography transesophageal	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	9	1	1	1	4	0	0	1	0



Radiography chest	Usually not appropriate	Expert Consensus	☼ <0.1 mSv	☼ <0.03 mSv [ped]	1	1	9	5	3	0	0	0	0	0	0
Aortography chest abdomen pelvis	Usually not appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv		1	1	11	3	2	0	0	0	0	0	1

## **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](http://www.acr.org/ac).