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.

	Appropr	iateness	COL			D (1				I	Final	Tabu	latio	ns		
Procedure	Categ	gory	SOE	Adults RR	L Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CTA chest abdomen pelvis with IV contrast	Usua approp	ally oriate	Strong	ହହହହ ୁ 3 100 mSv		9	9	0	0	1	0	0	1	2	4	9
			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	ତତତ 1-10 mSv	ତତତତ 3- 10 mSv [ped]	7	7	0	1	0	0	2	3	5	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	O 0 mSv	O 0 mSv [ped]	7	7	0	0	1	0	2	1	8	5	0
		References		Study	V 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	O 0 mSv	O 0 mSv [ped]	7	7	0	0	0	0	0	4	6	4	3
		References		Study	v 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	O 0 mSv	O 0 mSv [ped]	6	6	0	0	1	2	4	2	6	2	0
		References		Study	y 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	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	0	5	4	5	2	1
		References		Study	y 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	ଝେଝ 1-10 mSv	≎≎≎≎≎ 3- 10 mSv [ped]	5	5	0	0	0	8	6	2	0	0	0
		References		Study	y Quality										
		34 (24267718)			4										
		33 (28723768)			3										
		32 (28078377)			4										
		31 (32198657)			4										
CT chest abdomen pelvis with IV contrast	May be appropriate	Limited	େବେଡେଡ 10-3 mSv	30	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	ବବତ 10-30 mSv	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	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	O 0 mSv	O 0 mSv [ped]	5	5	0	1	2	1	9	3	0	0	0
		References		Study	y 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	O 0 mSv	O 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	ତେତେ 1-10 mSv	≎≎≎≎≎ 3- 10 mSv [ped]	4	4	0	0	1	8	5	2	0	0	0

		References		Study	v Quality										
		5 (26916280)			4										
		34 (24267718)			4										
		33 (28723768)			3										
		32 (28078377)			4										
		31 (32198657) 35 (31264015)			4										
		35 (31264015)		3											
CT chest abdomen pelvis without IV contrast	Usually not appropriate	Expert Consensus	ଷଷଷଷ 10-30 mSv	≎≎≎≎ 3- 10 mSv [ped]	3	3	1	3	6	3	2	2	0	0	0
CT chest without IV contrast	Usually not appropriate	Expert Consensus	ତେତ 1-10 mSv	€€€€€ 3- 10 mSv [ped]	2	2	4	4	4	1	3	1	0	0	0
Aortography chest abdomen pelvis	Usually not appropriate	Expert Consensus	ଝଝଝଝ 10-30 mSv		2	2	9	5	1	0	1	0	0	0	1
Radiography chest	Usually not appropriate	Expert Consensus	& <0.1 mSv		1	1	9	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.

	Appropri	ateness	COL			D (1)	N/ 11			ŀ	Final	Tabu	latio	ns		
Procedure	Categ	gory	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CTA chest abdomen pelvis with IV contrast	Usua approp		Strong	ଡଡଡଡଡ 30- 100 mSv	⊕⊕⊕⊕⊕ 10-30 mSv [ped]	9	9	0	0	0	0	0	1	0	5	11
			References		Study	Quality										
			1 (23701088)			4										
			67 (29156021)			2										
			66 (24139983)			2										
			65 (24820894)			2										
			64 (22109332)			2										

							1								
		63 (22305684)			4										
		61 (26070621)			4		ļ								
		41 (23958070)			4										
		40 (34655311)			2										
		37 (19001643)			4										
MRA chest abdomen pelvis with IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	8	8	1	0	1	0	0	2	5	6	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	ତତତ 1-10 mSv	ଡଡଡଡଡ 3- 10 mSv [ped]	6	6	0	0	0	2	4	3	5	2	0
		References		Study	v 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	ଙଙଙେ 10-3 mSv	0	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 approp	be briate	Limited	ତତତତ 10-30 mSv	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	6	6	0	0	0	1	7	7	1	0	0
			References		Study	/ Quality										
			34 (24267718)			4										
CT chest with IV contrast	May approp		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 approp		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 approp		Strong	O 0 mSv	O 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 approp (Disagre	oriate	Expert Opinion	O 0 mSv	O 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)		1	3		-	-	-						
MRA chest with IV contrast	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	5	5	1	0	1	2	6	6	0	0	0
		References		Study	y Quality										
		61 (26070621)			4										
		48 (32251236)			3										
		47 (28905233)			2										
		46 (33409772)			1										
		45 (32506262)			3										
US echocardiography transthoracic resting	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	3	3	3	1	8	3	1	0	0	0	0
		References		Study	y Quality										
		1 (23701088)			4										
		5 (26916280)			4										
		28 (27060285)			4										
		54 (29398308)			3							-			
US echocardiography transesophageal	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	3	3	2	2	7	3	1	1	0	0	0
		References		Study	y Quality										
		5 (26916280)			4										
		70 (25684644)			3										
		69 (8837572)			3										
CT chest without IV contrast	Usually not appropriate	Expert Consensus	ତତତ 1-10 mSv	€€€€ 3- 10 mSv [ped]	2	2	5	7	1	3	0	1	0	0	0
CT chest abdomen pelvis without IV contrast	Usually not appropriate	Expert Consensus	ଡଡଡଡ 10-30 mSv	€€€€ 3- 10 mSv [ped]	2	2	4	6	3	2	0	2	0	0	0

US duplex Doppler iliofemoral arteries	Usually approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	9	3	0	3	1	0	1	0	0
Aortography chest abdomen pelvis	Usually approp	Limited	ଡେଡେଡ 10-3(mSv	D	2	2	3	8	3	0	2	0	0	0	0
		 References		Study	Quality										
		62 (24085324)			2										
US duplex Doppler aorta abdomen	Usually approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	3	1	2	1	1	0	0	0

Variant 3: Adult. Postthoracic endovascular repair of thoracic aortic aneurysm or dissection. Follow-up imaging.

	Appropriatene	SS COL			D.C	NF 11			ŀ	inal	Tabu	latio	ns		
Procedure	Category	SOE SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CTA chest abdomen pelvis with IV contrast	Usually appropriate	Strong	ଷ୍ଟ୍ରଷ୍ଟ୍ର 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										

						-					
		21 (24952822)		2		_					
		20 (24560244)		2							
		19 (24144537)		2							
		12 (27707621)		3							
CTA chest with IV contrast	Usually appropriate	Strong	ଝେଝ 1-10 mSv	ଡଡଡଡ 3- 10 mSv 7 [ped]	7	0	0	1 0	4 2	2 2	6 2
		References		Study Quality	7						
		37 (19001643)		4							
		80 (25173654)		4							
		81 (23830947)		2							
		82 (28341530)		3							
		83 (23345371)		3							
		23 (34233714)		2							
		22 (26787656)		2		_					
		21 (24952822)		2							
		20 (24560244)		2		_					
		19 (24144537)		2		_					
		12 (27707621)		3							
		74 (32891743)		2							
		88 (29097043)		2							
		87 (28369453)		3							
		86 (25282168)		4		_					
		85 (24571939)		2		_					
[84 (24816512)		3					<u> </u>		
MRA chest abdomen pelvis with IV contrast	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped] 7	7	0	1	0 0	3 3	3 3	4 3
		References		Study Quality	7						
		92 (21331596)		3							
		91 (12835978)		3							
		90 (10470877)		4							
		89 (11042644)		4							

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

		References		Study	Quality]								
		34 (24267718)		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	4		1								
		33 (28723768)			3										
		32 (28078377)			4		1								
		31 (32198657)			4		1								
MRA chest without IV contrast	May be appropriate	Limited	O 0 mSv	O 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		<u> </u>								
MRA chest abdomen pelvis without IV contrast	May be appropriate	Limited	O 0 mSv	O 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	O 0 mSv	O 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	ତେତେ 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	Usuall approp	y not oriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	7	6	1	0	2	0	1	0	0
Radiography chest	Usuall approp		Expert Consensus	ি <0.1 mS	v	2	2	5	7	4	1	0	0	0	0	0
Aortography chest abdomen pelvis	Usuall approp		Expert Consensus	େବେବେ 10-3 mSv	60	2	2	7	5	2	0	2	0	1	0	0
US duplex Doppler aorta abdomen	Usuall approp		Limited	O 0 mSv	O 0 mSv [ped]	1	1	11	3	2	0	1	0	0	0	0
			References		Study	v Quality										
			73 (31303063)			4			_			-				_
US echocardiography transesophageal	Usuall approp		Expert Consensus	O 0 mSv	O 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.

	Appropriateness	005							I	Final	Tabu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CTA chest abdomen pelvis with IV contrast	Usually appropriate	Strong	ଡଡଡଡଡ 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										
		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 appropria	y ate	Strong	ତତତ 1-1 mSv	0	֎֎֎֎ 3- 10 mSv [ped]	7	7	0	0	1	0	3	4	4	2	3
			References			Study	V 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			1							
MRA chest abdomen pelvis with IV contrast	Usually appropria	y ate	Limited	O 0 mSv	,	O 0 mSv [ped]	7	7	0	0	0	0	2	3	6	5	1
			References			Study	V Quality										
			97 (25623219)				4										
			98 (32772927)				3										
CT chest abdomen pelvis with IV contrast	May be appropria		Limited		30	ଡଡଡଡ 3- 10 mSv [ped]	6	6	0	0	0	2	5	6	2	1	0

		References		Study	Quality										
		34 (24267718)		Stady	4										
		31 (32198657)			4										
		32 (28078377)			4										
		33 (28723768)			3										
MRA chest abdomen pelvis without IV contrast	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	6	6	0	0	1	1	4	3	6	2	0
		References		Study	v Quality					•					
		1 (23701088)		Ē	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	O 0 mSv	O 0 mSv [ped]	6	6	0	0	1	1	3	4	7	1	0
		References		Study	v Quality		-								-
		97 (25623219)			4										
		98 (32772927)			3					-					
CT chest with IV contrast	May be appropriate	Limited	≎≎≎ 1-10 mSv	ତତତତ 3- 10 mSv [ped]	5	5	0	0	0	2	10	4	0	0	0
		References		Study	v Quality										
		34 (24267718)			4										
		6 (28833419)			4										
CT chest without and with IV contrast	May be appropriate	Limited	≎≎≎ 1-10 mSv	ତତତତ 3- 10 mSv [ped]	5	5	0	0	2	5	7	2	0	0	0
		References		Study	v Quality										
		4 (28475566)			2										
		34 (24267718)			4										

CT chest abdomen pelvis without and with IV contrast	May approp			0 200000 0 10-30 mSv [ped]	5	5	0	0	0	2	9	2	2	1	0
		References		Study	V Quality										
		34 (24267718)			4										
		31 (32198657)			4										
		32 (28078377)			4										
		33 (28723768)		3											
MRA chest without IV contrast	May approp	Strong O 0 mSv		O 0 mSv [ped]	5	5	0	0	0	3	10	3	0	0	0
		References		Study Quality											
		1 (23701088)		4											
		99 (35000609)													
		68 (33557887)			1										
		52 (30664117)			2										
		51 (29084542)			2										
		50 (32852711)			3										
		48 (32251236)			3	_									
CT chest abdomen pelvis without IV contrast	May approp	Expert Consensus	ତତତତ 10-3(mSv	0 2222 3- 10 mSv [ped]	4	4	3	3	2	3	4	2	0	0	0
CT chest without IV contrast	Usuall _{approp}	Expert Consensus	ଡଡଡ 1-10 mSv	≎≎≎≎ 3- 10 mSv [ped]	3	3	2	3	7	3	1	0	0	0	0
US duplex Doppler aorta abdomen	Usuall approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	13	3	0	1	0	0	0	0	0
US echocardiography transthoracic resting	Usuall approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	2	0	1	4	0	0	1	0
US echocardiography transesophageal	Usuall approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	1	1	1	4	0	0	1	0

Radiography chest	Usually not appropriate	Expert Consensus	愛 < 0.1 mSv	Image: \$\mathcal{T}\$ mSv [ped]	1	1	9	5	3	0	0	0	0	0	0
Aortography chest abdomen pelvis	Usually not appropriate	Expert Consensus	ଷଷଷଷ 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.