American College of Radiology ACR Appropriateness Criteria®

Cerebrovascular Diseases-Stroke and Stroke-Related Conditions

Variant 1: Adult. Clinical transient ischemic attack (TIA). Symptoms resolved. Initial imaging

	Appropriateness	COF	A L L DDY	D I DDI	D (1	3.7.11			F	inal	Tabu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT head without IV contrast	Usually appropriate	Strong	≎≎≎ 1-10 mSv	��� 0.3- 3 mSv [ped]	9	9	0	0	0	0	0	0	1	3	15
		References		Study	Quality										
		21 (25477216)			2										
		20 (26747699)			4										
		14 (23228203)			2										
		19 (24029731)			4										
		13 (31662037)			4										
CTA neck with IV contrast	Usually appropriate	Limited	≎≎≎ 1-10 mSv	��� 0.3- 3 mSv [ped]	8	8	0	0	0	0	0	1	3	11	4
		References		Study	Quality										
		12 (34024117)			4										
		24 (10219418)			2										
MRI head without IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	8	8	1	0	0	1	0	0	3	6	8
		References		Study	Quality										
		36 (25817629)			4										
		35 (25813066)			2										
		29 (24256197)			2										
		34 (24453269)			4										

CTA head with IV contrast	Usually appropriate	Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	7	7	0	0	0	1	0	1	8	6	3
		References		Study	Quality										
		23 (35314513)			4										
		22 (26330567)			2										
US duplex Doppler carotid artery	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	7	7	0	0	0	0	2	1	10	2	4
		References		Study	Quality										
		12 (34024117)			4										
		38 (16679163)		l	M										
MRA head without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	1	7	9	2	0	0
		References		Study	Quality		•			•					
		25 (23907247)			4										
MRA neck without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	0	9	9	1	0	0
		References		Study	Quality		•								
		12 (34024117)			4										
		26 (18556586)		Not A	ssessed										
		27 (19164440)			2										
MRA neck without and with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	1	7	9	2	0	0
		References		Study	Quality										
		12 (34024117)			4										
		26 (18556586)		Not A	ssessed										
		27 (19164440)			2										
MRI head without and with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	3	3	5	1	6	6	1	0	0	0	0
		References		Study	Quality										
		34 (24453269)			4										

CT head perfusion with IV contrast	Usually approp	Strong	��� 1-10 mSv		2	2	6	4	2	1	4	1	1	0	0
		References		Study	y Quality			•			•				
		18 (22068990)			2										
		17 (27939758)			2										
		14 (23228203)			2										
		15 (21220677)			2										
		16 (34925211)			2				ı						
MRI head perfusion with IV contrast	Usually approp	Strong	O 0 mSv	O 0 mSv [ped]	2	2	7	3	7	1	0	0	1	0	0
		References		Study	y Quality										
		33 (29146719)			2										
		32 (17200864)			2										
		28 (15569725)			4										
		30 (27070836)			2										
		29 (24256197)			2										
		31 (11003277)			2										
		18 (22068990)			2										
CT head with IV contrast	Usually approp	Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	17	0	2	0	0	0	0	0	0
CT head without and with IV contrast	Usually approp	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	16	1	2	0	0	0	0	0	0
Arteriography cervicocerebral	Usually approp	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	13	5	1	0	0	0	0	0	0
MRA head without and with IV contrast	Usually approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	16	3	0	0	0	0	0	0	0
US duplex Doppler transcranial	Usually approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	7	1	0	0	0	0	0	0

MRV head without IV contrast	Usuall approp	Limited	O 0 mSv	, (O 0 mSv [ped]	1	1	12	1	4	1	1	0	0	0	0
		References			Study	Quality										
		37 (21917479)				4										
CTV head with IV contrast	Usuall approp	Expert Consensus	��� 1-10 mSv		2000 3- 10 mSv [ped]	1	1	14	1	2	1	1	0	0	0	0
MRV head without and with IV contrast	Usuall approp	Limited	O 0 mSv	,	O 0 mSv [ped]	1	1	11	3	3	1	0	1	0	0	0
		References			Study	Quality										
		37 (21917479)				4										

Variant 2: Adult. Focal neurologic deficit. Clinically suspected acute ischemic stroke. Initial imaging.

	Appropria	ateness	905		_ _		5				F	inal [Tabu l	latio	ns		
Procedure	Catego	ory	SOE	Adults RR	L Pe	eds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CTA head with IV contrast	Usual appropr		Strong	��� 1-10 mSv	⁾ 1	��� 3- 0 mSv [ped]	9	9	0	0	1	0	0	1	1	5	11
			References			Study	Quality										
			60 (35342807)				2										
			57 (29364767)				1										
			44 (26898852)			Not A	Assessed										
			46 (29129157)				4										
			48 (36239644)				1										
			49 (36239645)				2		_								
CTA neck with IV contrast	Usual appropr		Moderate	��� 1-10 mSv) 3	�� 0.3- 3 mSv [ped]	9	9	1	0	0	0	0	1	1	5	11
			References			Study	Quality										
			12 (34024117)				4										
			13 (31662037)				4										

		61 (27092472)			2										
CT head without IV contrast	Usually appropriate	Strong	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	9	9	0	0	1	0	0	0	0	0	18
		References		Study	Quality										
		58 (10905241)			2										
		59 (18617663)			2										
MRI head without IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	7	7	0	0	2	0	4	3	3	4	3
		References		Study	Quality										
		56 (27673305)			2										
		52 (32668115)			4										
		46 (29129157)			4										
		47 (35138767)			2										
		48 (36239644)			1										
		49 (36239645)			2										
		40 (29766770)			2										
		39 (16339467)			4			ı	1		1		I		
CT head perfusion with IV contrast	May be appropriate	Strong	��� 1-10 mSv		6	6	0	1	1	0	6	4	2	1	4
		References		Study	Quality										
		13 (31662037)			4										
		46 (29129157)			4										
		57 (29364767)			1										
		56 (27673305)			2			1		-					
MRA head without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	1	6	7	3	1	1
		References		Study	Quality									-	
		39 (16339467)			4										
		52 (32668115)			4										
		56 (27673305)			2										

MRA neck without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	0	16	2	1	0	0
		References		Study	Quality		•								
		39 (16339467)		_	4										
		52 (32668115)			4										
		56 (27673305)			2										
MRA neck without and with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	1	14	2	2	0	0
		References		Study	/ Quality										
		12 (34024117)			4										
		39 (16339467)			4										
		56 (27673305)			2										
		52 (32668115)			4										
MRI head perfusion with IV contrast	May be appropriate	Moderate	O 0 mSv	O 0 mSv [ped]	4	4	3	1	5	1	7	1	0	1	0
		References		Study	Quality		•								
		39 (16339467)			4										
		46 (29129157)			4										
		57 (29364767)			1										
US duplex Doppler carotid artery	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	4	4	3	2	4	3	5	1	0	0	1
		References		Study	/ Quality										
		12 (34024117)			4										
		63 (10471419)			4										
		64 (29307510)			2										
Arteriography cervicocerebral	Usually not appropriate	Strong	��� 1-10 mSv	���� 3- 10 mSv [ped]	2	2	7	4	8	0	0	0	0	0	0
		References		Study	/ Quality										
		55 (29075836)			2										
		54 (35593152)			Good										

		53 (35251309)		(Good										
MRI head without and with IV contrast	Usually approp	Limited	O 0 mSv	O 0 mSv [ped]	2	2	5	5	8	1	0	0	0	0	0
		References		Study	y Quality										
		62 (29934921)			4										
CTV head with IV contrast	Usually approp	Expert Consensus	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	2	2	9	4	4	0	1	1	0	0	0
CT head with IV contrast	Usually approp	Expert Consensus	≎≎≎ 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	13	3	1	0	0	0	1	1	0
CT head without and with IV contrast	Usually approp	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	12	4	2	0	0	0	0	0	1
MRA head without and with IV contrast	Usually approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	14	3	2	0	0	0	0	0	0
US duplex Doppler transcranial	Usually approp	Limited	O 0 mSv	O 0 mSv [ped]	1	1	10	1	5	1	1	1	0	0	0
		References		Study	y Quality										
		39 (16339467)			4										
MRV head without IV contrast	Usually approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	3	3	1	2	0	0	0	0
MRV head without and with IV contrast	Usually approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	3	3	1	1	1	0	0	0

Variant 3: Adult. Recent ischemic infarct; less than 24 hours. Initial imaging.

D 1	Appropriateness	COE	A L L DDI	D I DDI	D 41	3.7. 11			F	inal '	Гаbи	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CTA head with IV contrast	Usually appropriate	Strong	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	9	9	0	0	1	0	0	1	2	3	12

		References		Study	/ Quality										
		60 (35342807)			2										
		57 (29364767)			1										
		44 (26898852)		Not A	Assessed										
		46 (29129157)			4										
		48 (36239644)			1										
		49 (36239645)			2										
CTA neck with IV contrast	Usually appropriate	Moderate	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	9	9	1	0	0	0	0	1	3	2	12
		References		Study	Quality										
		12 (34024117)			4										
		13 (31662037)			4										
		61 (27092472)			2										
CT head without IV contrast	Usually appropriate	Strong	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	9	9	0	0	1	0	0	0	1	2	15
		References		Study	Quality		•								
		59 (18617663)			2										
		58 (10905241)			2										
		57 (29364767)			1										
		47 (35138767)			2										
		48 (36239644)			1										
		49 (36239645)			2										
		44 (26898852)		Not A	Assessed										
		46 (29129157)			4										
MRA head without IV contrast	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	7	7	0	0	0	1	2	0	12	3	1
		References		Study	Quality										_
		39 (16339467)			4										
		52 (32668115)			4										
		56 (27673305)			2										

MRA neck without and with IV contrast	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	7	7	0	0	0	0	8	1	8	2	0
		References		Study	Quality										
		12 (34024117)			4										
		39 (16339467)			4										
		56 (27673305)			2										
		52 (32668115)			4										
MRI head without IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	7	7	1	0	0	0	4	3	4	1	6
		References		Study	Quality										
		56 (27673305)			2										
		52 (32668115)			4										
		46 (29129157)			4										
		47 (35138767)			2										
		48 (36239644)			1										
		49 (36239645)			2										
		40 (29766770)			2										
		39 (16339467)		_	4										
CT head perfusion with IV contrast	May be appropriate	Strong	��� 1-10 mSv		6	6	0	0	0	0	8	10	0	0	1
		References		Study	Quality										
		13 (31662037)			4										
		46 (29129157)			4										
		57 (29364767)			1										
		56 (27673305)			2										
MRA neck without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	1	13	3	2	0	0
		References		Study	Quality										
		39 (16339467)			4										
		52 (32668115)			4										
		56 (27673305)			2										

MRI head perfusion with IV contrast	May be appropria		Moderate	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	1	14	3	0	1	0
			References		Stud	ly Quality										
			39 (16339467)			4										
			46 (29129157)			4										
			57 (29364767)			1										
US duplex Doppler carotid artery	May be appropria		Limited	O 0 mSv	O 0 mSv [ped]	5	5	1	0	0	6	10	2	0	0	0
			References		Stud	ly Quality										
			63 (10471419)			4										
			64 (29307510)			2										
			12 (34024117)			4										
MRI head without and with IV contrast	Usually r appropria	not ate	Limited	O 0 mSv	O 0 mSv [ped]	3	3	5	2	4	6	2	0	0	0	0
			References		Stud	ly Quality										
			62 (29934921)			4					_					
Arteriography cervicocerebral	Usually r appropria		Strong	��� 1-10 mSv	���� 3- 10 mSv [ped]	2	2	7	4	8	0	0	0	0	0	0
			References		Stud	ly Quality										
			55 (29075836)			2										
			54 (35593152)			Good										
			53 (35251309)			Good										
US duplex Doppler transcranial	Usually r appropria		Limited	O 0 mSv	O 0 mSv [ped]	2	2	8	3	4	1	2	1	0	0	0
			References		Stud	ly Quality										
			39 (16339467)			4										
CT head with IV contrast	Usually r appropria		Expert Consensus	≎≎≎ 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	13	2	3	0	0	0	1	0	0

CT head without and with IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	1	1	12	3	2	1	0	0	0	0	1
MRA head without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	15	3	1	0	0	0	0	0	0
MRV head without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	4	1	1	1	0	0	1	0
CTV head with IV contrast	Usually not appropriate	Expert Consensus	୫୫୫ 1-10 mSv	���� 3- 10 mSv [ped]	1	1	10	3	3	0	1	1	0	1	0
MRV head without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	4	2	1	1	0	0	1	0

Variant 4: Adult. Recent ischemic infarct; greater than 24 hours. Initial imaging.

D 1	Appropriate	ness	A L L DDI	D I DDI	.	3.5.11			F	inal '	Fabu l	latio	ns		
Procedure	Category	SOE SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT head without IV contrast	Usually appropriat	SHORE	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	9	9	0	0	1	0	0	1	0	4	13
		References		Study	Quality										
		68 (34921104)			2										
		67 (24525954)			2										
CTA head with IV contrast	Usually appropriat		��� 1-10 mSv	ଡେଡେଡେ 3- 10 mSv [ped]	7	7	0	0	0	1	4	4	6	2	2
		References		Study	Quality										
		22 (26330567)			2										
		23 (35314513)			4										
		69 (35143758)			4										
CTA neck with IV contrast	Usually appropriat	e Limited	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	7	7	0	0	1	0	2	4	5	2	5

		References		Study	Quality										
		12 (34024117)			4										
		13 (31662037)			4			1		ı					
MRI head without IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	7	7	0	0	1	0	3	3	3	1	8
		References		Study	Quality										
		79 (35862046)			2										
		78 (33043760)			2										
		74 (22367989)			2										
		75 (23173645)			4										
		76 (23894258)			2										
		77 (31479136)			4										
		12 (34024117)			4										
		13 (31662037)			4		_	1		ı					
MRA head without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	6	6	0	1	0	1	5	3	7	1	1
		References		Study	Quality										
		22 (26330567)			2										
		23 (35314513)			4										
		69 (35143758)			4										
MRA neck without IV contrast	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	6	6	0	1	0	1	7	8	2	0	0
		References		Study	Quality										
		71 (16155164)			2										
		70 (15955853)			2										
MRA neck without and with IV contrast	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	6	6	0	1	0	0	7	9	1	0	1
		References		Study	Quality										
		70 (15955853)			2										
		71 (16155164)			2										

US duplex Doppler carotid artery	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	1	5	11	2	0	0
		References		Study	y Quality										
		80 (29522870)			2										
		38 (16679163)			M										
		12 (34024117)			4										
		24 (10219418)			2										
		13 (31662037)			4					1					
CT head perfusion with IV contrast	Usually not appropriate	Strong	≎≎≎ 1-10 mSv		3	3	4	3	7	1	4	0	0	0	0
		References		Study	y Quality		•								
		17 (27939758)			2										
		18 (22068990)			2										
Arteriography cervicocerebral	Usually not appropriate	Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	3	3	3	6	9	0	0	0	0	0	1
		References		Study	y Quality										
		66 (31649101)			4					_					
MRI head without and with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	3	3	6	2	4	1	6	0	0	0	0
		References		Study	y Quality		·								
		62 (29934921)			4										
MRI head perfusion with IV contrast	Usually not appropriate	Strong	O 0 mSv	O 0 mSv [ped]	2	2	6	4	3	3	3	0	0	0	0
		References		Study	y Quality										
		18 (22068990)			2										
		73 (21737809)			2										
		72 (23908062)			2										
		31 (11003277)			2										
		32 (17200864)			2										
		33 (29146719)			2										

CT head with IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	13	2	3	0	0	0	1	0	0
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	1	1	12	2	3	1	0	0	0	1	0
MRA head without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	14	3	2	0	0	0	0	0	0
US duplex Doppler transcranial	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	3	1	1	2	1	0	0	0
MRV head without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	3	3	1	1	0	1	0	0
CTV head with IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	1	1	12	2	1	1	2	0	0	1	0
MRV head without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	3	3	1	1	0	0	1	0

Variant 5: Adult. Prior ischemic infarct. Surveillance imaging.

n .	Appropri	ateness	GOT.	4.1.4. DD		D 1 DD1	D	3.6.11			F	inal '	Tabu	latio	ns		
Procedure	Categ		SOE	Adults RR	KL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT head without IV contrast	Usua approp		Strong	��� 1-10 mSv	0	��� 0.3- 3 mSv [ped]	8	8	1	0	1	0	1	1	2	5	8
			References			Study	Quality										
			67 (24525954)				2										
			68 (34921104)				2										
CTA head with IV contrast	May approp		Limited	��� 1-10 mSv	0	���� 3- 10 mSv [ped]	5	5	2	0	0	1	14	1	1	0	0
			References			Study	Quality										
			22 (26330567)				2										

		23 (35314513)			4										
		69 (35143758)			4										
CTA neck with IV contrast	May be appropriate	Strong	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	5	5	1	0	0	1	14	2	1	0	0
		References		Study	Quality		•				•				
		12 (34024117)			4										
		13 (31662037)			4										
		81 (25721945)			1										
		24 (10219418)			2										
		82 (33004431)			4										
MRA head without IV contrast	May be appropriate (Disagreement)	Expert Opinion	O 0 mSv	O 0 mSv [ped]	5	5	1	1	0	8	6	1	1	0	1
		References		Study	Quality										
		22 (26330567)			2										
		23 (35314513)			4										
		69 (35143758)			4										
MRA neck without IV contrast	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	5	5	1	1	0	5	9	2	0	0	1
		References		Study	Quality										
		85 (26077590)			2										
		84 (26077583)			4										
		83 (22498329)			2						1				
MRA neck without and with IV contrast	May be appropriate (Disagreement)	Expert Opinion	O 0 mSv	O 0 mSv [ped]	5	5	1	1	0	6	8	1	0	1	1
		References		Study	Quality					-					
		12 (34024117)			4										
		13 (31662037)			4										
		85 (26077590)			2										
		83 (22498329)			2										
		84 (26077583)			4										

MRI head without IV contrast	May be appropriate (Disagreement)	Expert Opinion	O 0 mSv	O 0 mSv [ped]	5	5	0	1	0	2	5	2	6	2	1
		References		Study	y Quality		•								
		79 (35862046)			2										
		78 (33043760)			2										
		74 (22367989)			2										
		75 (23173645)			4										
		76 (23894258)			2										
		77 (31479136)			4										
		12 (34024117)			4										
		13 (31662037)			4										
US duplex Doppler carotid artery	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	1	0	0	3	10	4	1	0	0
		References		Study	y Quality				•		•	•			
		12 (34024117)			4										
		13 (31662037)			4										
		38 (16679163)			M										
Arteriography cervicocerebral	Usually not appropriate	Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	3	3	7	2	5	3	1	1	0	0	0
		References		Study	y Quality										
		66 (31649101)			4										
MRI head without and with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	3	3	6	2	6	4	0	1	0	0	0
		References		Study	y Quality		•								
		62 (29934921)			4										
CT head perfusion with IV contrast	Usually not appropriate	Strong	≎		2	2	6	5	8	0	0	0	0	0	0
		References		Study	y Quality										
		17 (27939758)			2										
		18 (22068990)			2										

MRI head perfusion with IV contrast	Usually approp	Strong	O 0 mSv	O 0 mSv [ped]	2	2	7	3	7	0	2	0	0	0	0
		References		Study	Quality										
		18 (22068990)			2										
		33 (29146719)			2										
		31 (11003277)			2										
		32 (17200864)			2		_				1				
CT head with IV contrast	Usually approp	Expert Consensus	��� 1-10 mSv	⊕⊕⊕ 0.3- 3 mSv [ped]	1	1	13	3	2	0	0	1	0	0	0
CT head without and with IV contrast	Usually approp	Expert Consensus	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	1	1	12	2	4	0	0	0	1	0	0
MRA head without and with IV contrast	Usually approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	12	2	1	0	2	1	1	0	0
US duplex Doppler transcranial	Usually approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	3	1	2	3	0	0	0	0
MRV head without IV contrast	Usually approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	2	3	0	2	0	0	0	1
CTV head with IV contrast	Usually approp	Expert Consensus	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	1	1	12	2	2	0	2	0	1	0	0
MRV head without and with IV contrast	Usually approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	2	4	0	1	0	1	0	0

Variant 6: Adult. Known intraparenchymal hemorrhage. No history of trauma. Follow-up imaging study.

D 1	Appropriateness	COE	A L L DDI	D I DDI	D 41	3.6 11			F	inal '	Гаbu	latio	ıs		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT head without IV contrast	Usually appropriate	Expert Consensus	≎≎≎ 1-10 mSv	��� 0.3- 3 mSv [ped]	9	9	1	0	0	0	0	2	3	1	12

CTA head with IV contrast	Usually appropriate	Strong	��� 1-10 mSv	≎≎≎≎ 3- 10 mSv [ped]	8	8	0	0	1	1	0	1	4	5	7
		References		Study	Quality										
		5 (34794589)			4										
		95 (19910545)			3										
		91 (30193811)			2										
		94 (24136645)			2										
		92 (19342546)			1										
		93 (25177839)			2										
MRI head without and with IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	8	8	0	0	1	0	2	1	3	6	6
		References		Study	Quality										
		98 (20733299)		_	2										
		97 (10800260)			2										
		96 (21761271)			1										
MRI head without IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	7	7	0	0	1	0	2	4	4	4	4
		References		Study	Quality										
		97 (10800260)		•	2										
		98 (20733299)			2										
Arteriography cervicocerebral	May be appropriate	Strong	⊕⊕⊕ 1-10 mSv	���� 3- 10 mSv [ped]	5	5	0	0	0	2	9	6	2	0	0
		References		Study	Quality										
		90 (9836762)			4										
		89 (26553142)			1										
		88 (9227692)			2										
MRA head without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	0	10	7	1	0	1
		References		Study	Quality										
		93 (25177839)			2										

		95 (19910545)			3										
MRV head without IV contrast	May approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	2	14	2	1	0	0
CTV head with IV contrast	May approp	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	5	5	0	0	0	1	15	2	1	0	0
MRV head without and with IV contrast	May approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	0	15	3	0	1	0
MRI head perfusion with IV contrast	Usuall approp	Limited	O 0 mSv	O 0 mSv [ped]	3	3	7	1	7	0	3	1	0	0	0
		References		Study	Quality								•	•	
		5 (34794589)			4										
CTA neck with IV contrast	Usuall approp	Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	2	2	7	5	7	0	0	0	0	0	0
CT head without and with IV contrast	Usuall approp	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	2	2	9	6	2	2	0	0	0	0	0
CT head perfusion with IV contrast	Usuall approp	Limited	��� 1-10 mSv		2	2	7	4	7	0	1	0	0	0	0
		References		Study	Quality										
		5 (34794589)			4				,						
MRA head without and with IV contrast	Usuall approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	7	4	8	0	0	0	0	0	0
MRA neck without IV contrast	Usuall approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	8	4	5	0	1	0	0	0	1
MRA neck without and with IV contrast	Usuall approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	8	4	3	1	1	0	0	1	1
CT head with IV contrast	Usuall approp	Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	10	3	1	2	2	0	1	0	0

US duplex Doppler carotid artery	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	15	3	1	0	0	0	0	0	0
US duplex Doppler transcranial	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	16	2	1	0	0	0	0	0	0

Variant 7: Adult. Suspected venous sinus thrombosis. Initial imaging.

D 1	Appropriateness	COF	ALL DDI	D I DDI	D 41	3.6 11			ŀ	inal	Tabu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT head without IV contrast	Usually appropriate	Limited	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	9	9	0	0	0	0	0	0	3	6	10
		References		Study	y Quality										
		99 (21293023)			4										
CTV head with IV contrast	Usually appropriate	Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	9	9	0	0	1	0	0	1	1	2	14
		References		Study	y Quality										
		101 (9393193)			3									_	
MRV head without and with IV contrast	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	9	9	1	0	0	0	0	0	0	2	16
		References		Study	y Quality										
		104 (25938564))		2		_								
MRI head without IV contrast	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	8	8	0	0	0	1	0	0	6	7	5
		References		Study	y Quality										
		103 (26670082))		2										
		102 (11237970))		4						_				
MRI head without and with IV contrast	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	8	8	1	1	0	0	1	0	3	5	8
		References		Study	y Quality										

		103 (26670082)			2										
		103 (20070082)			4										
MRV head without IV contrast	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	8	8	1	0	0	0	0	1	4	4	9
		References		Study	Quality			•						•	
		104 (25938564))		2										
CT head with IV contrast	May be appropriate	Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	4	4	4	2	2	6	4	1	0	0	0
CTA head with IV contrast	Usually not appropriate	Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	3	3	5	3	3	4	3	1	0	0	0
		References		Study	Quality										
		5 (34794589)			4		_								
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		3	3	6	1	5	2	4	0	0	1	0
CT head perfusion with IV contrast	Usually not appropriate	Limited	��� 1-10 mSv		3	3	6	3	6	2	1	1	0	0	0
		References		Study	/ Quality										
		100 (24172883))		3										
MRI head perfusion with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	3	3	6	3	4	3	3	0	0	0	0
		References		Study	/ Quality										
		100 (24172883)			3										
CTA neck with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	10	5	3	0	1	0	0	0	0
Arteriography cervicocerebral	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	10	3	0	3	2	1	0	0	0
MRA head without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	14	2	2	0	1	0	0	0	0

MRA head without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	13	3	2	0	1	0	0	0	0
MRA neck without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	16	2	0	1	0	0	0	0	0
MRA neck without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	16	2	0	1	0	0	0	0	0
US duplex Doppler carotid artery	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	15	3	1	0	0	0	0	0	0
US duplex Doppler transcranial	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	15	3	0	0	1	0	0	0	0

Variant 8: Adult. Known venous sinus thrombosis. Surveillance imaging.

	Appropri	ateness	go n		_	D 1 DD1	5				F	inal '	Tabu	latio	ns		
Procedure	Categ	gory	SOE	Adults RR	L	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
MRV head without and with IV contrast	Usua approp		Limited	O 0 mSv	,	O 0 mSv [ped]	9	9	1	0	0	0	1	1	1	4	11
			References			Study	Quality										
			104 (25938564))			2			_		_					
CT head without IV contrast	Usua approp		Limited	��� 1-10 mSv	0	��� 0.3- 3 mSv [ped]	8	8	0	0	0	1	0	0	7	6	5
			References			Study	Quality										
			99 (21293023)				4			_		_					
MRI head without IV contrast	Usua approp		Limited	O 0 mSv	,	O 0 mSv [ped]	8	8	0	0	0	0	2	0	6	7	4
			References			Study	Quality										
			102 (11237970))			4										
			103 (26670082))			2										

MRI head without and with IV	TT.	11			. O 0 mSv											Τ
contrast	Usua approp		Limited	O 0 mSv	[ped]	8	8	0	0	0	0	2	0	7	5	5
			References		Stu	dy Quality										
			102 (11237970))		4										
			103 (26670082))		2										
MRV head without IV contrast	Usua approp		Limited	O 0 mSv	O 0 mSv [ped]	8	8	1	0	0	0	1	1	3	7	6
	•		References		Stu	dy Quality										
			104 (25938564))		2										
CTV head with IV contrast	Usua approp		Limited	��� 1-10 mSv	0	8	8	0	0	0	0	1	0	3	9	6
			References		Stu	dy Quality		-								
			101 (9393193)			3										
			106 (17114562))		2										
CTA head with IV contrast	Usually		Limited	��� 1-10 mSv	0	3	3	7	1	7	2	2	0	0	0	0
			References		Stu	dy Quality			•	•	•	•	•		•	
			5 (34794589)			4										
CT head with IV contrast	Usually		Expert Consensus	��� 1-10 mSv	0	3	3	5	1	5	4	2	2	0	0	0
CT head without and with IV contrast	Usually approp		Expert Consensus	��� 1-10 mSv	0	3	3	6	1	3	6	1	1	1	0	0
Arteriography cervicocerebral	Usually approp		Expert Consensus	��� 1-10 mSv	0	3	3	8	1	2	2	4	1	1	0	0
CT head perfusion with IV contrast	Usually approp		Limited	��� 1-10 mSv	0	2	2	8	2	5	4	0	0	0	0	0
			References		Stu	dy Quality										

100 (24172883)

MRI head perfusion with IV contrast	Usually approp	Limited	O 0 mSv	O 0 mSv [ped]	2	2	8	3	4	3	1	0	0	0	0
		References		Study	Quality										
		100 (24172883))		3									_	
CTA neck with IV contrast	Usually approp	Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	16	2	0	0	1	0	0	0	0
MRA head without IV contrast	Usually approp	Limited	O 0 mSv	O 0 mSv [ped]	1	1	12	3	2	1	1	0	0	0	0
		References		Study	Quality										
		5 (34794589)			4										
MRA head without and with IV contrast	Usually approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	15	2	1	1	0	0	0	0	0
MRA neck without IV contrast	Usually approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	15	3	0	1	0	0	0	0	0
MRA neck without and with IV contrast	Usually approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	15	3	0	1	0	0	0	0	0
US duplex Doppler carotid artery	Usually approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	16	2	1	0	0	0	0	0	0
US duplex Doppler transcranial	Usually approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	17	2	0	0	0	0	0	0	0

Variant 9: Adult. Asymptomatic cervical bruit. Initial imaging.

D 1	Appropriateness	go r	A L L. DDI	D 1 DD1	D 4	3.6.11			F	'inal '	Гаbu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
US duplex Doppler carotid artery	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	9	9	0	0	1	0	0	1	3	2	12

References	Study Quality
120 (15944595)	M

		110 (25 112277)			4										
		112 (35412377)			4										
		111 (25355838))		4			1		1	I	1			
CTA neck with IV contrast	Usually appropriate	Strong	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	8	8	0	0	1	0	1	3	4	4	6
		References		Study	Quality		-								
		24 (10219418)			2										
		116 (24343701))		2										
		113 (29896980))		2										
		115 (28251333))		2										
		114 (30378455))		4										
MRA neck without and with IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	8	8	0	0	1	0	1	0	3	6	8
		References		Study	Quality				•	•		•		•	
		27 (19164440)		_	2										
		119 (24008170))		1										
		113 (29896980))		2										
		114 (30378455))		4										
		117 (32877415))		2										
		118 (23988640))		4										
MRA neck without IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	7	7	0	0	0	0	2	1	10	1	5
		References		Study	Quality										
		27 (19164440)			2										
		119 (24008170))		1										
		113 (29896980))		2										
		114 (30378455))		4										
		117 (32877415))		2										
		118 (23988640))		4				ı			1		1	
CT head without IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	3	3	6	3	10	0	0	0	0	0	0

CTA head with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	≎≎≎≎ 3- 10 mSv [ped]	2	2	6	5	8	0	0	0	0	0	0
MRA head without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	9	2	8	0	0	0	0	0	0
MRI head without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	8	5	4	2	0	0	0	0	0
MRI head perfusion with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	9	3	3	1	3	0	0	0	0
CT head with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	14	3	1	0	0	0	1	0	0
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	1	1	14	3	1	0	0	1	0	0	0
CT head perfusion with IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv		1	1	13	3	2	0	1	0	0	0	0
Arteriography cervicocerebral	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	1	1	11	2	4	2	0	0	0	0	0
MRA head without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	13	1	0	1	2	1	1	0	0
MRI head without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	4	2	1	1	0	0	1	0
US duplex Doppler transcranial	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	4	2	1	1	0	0	0	0
MRV head without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	12	5	1	0	0	1	0	0	0
CTV head with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	14	3	1	0	1	0	0	0	0
MRV head without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	12	4	2	0	0	0	1	0	0

Variant 10: Adult. Asymptomatic carotid stenosis. Surveillance imaging.

D 1	Appropriateness	COF	A L L DDI	D I DDI	D 4	3.7.11			F	inal	Tabu	latio	ıs		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CTA neck with IV contrast	Usually appropriate	Strong	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	8	8	0	0	1	1	1	1	3	5	7
		References		Study	Quality										
		80 (29522870)			2										
		116 (24343701))		2										
		113 (29896980))		2										
		115 (28251333))		2										
		114 (30378455))		4										
MRA neck without and with IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	8	8	0	0	1	0	1	1	3	7	6
		References		Study	Quality										
		27 (19164440)			2										
		85 (26077590)			2										
		119 (24008170))		1										
		114 (30378455))		4										
		117 (32877415))		2										
		118 (23988640))		4										
		113 (29896980))		2			•							
US duplex Doppler carotid artery	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	8	8	0	0	0	0	1	1	4	6	7
		References		Study	Quality										
		120 (15944595))		M		_								
MRA neck without IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	7	7	0	0	0	1	0	1	10	3	4
		References		Study	Quality										

		27 (19104440)				<u> </u>										
			85 (26077590)			2										
			119 (24008170)			1										
			114 (30378455)			4										
			117 (32877415)			2										
			118 (23988640)			4										
			113 (29896980)			2										
MRI head without IV contrast	May approp (Disagre	riate	Expert Opinion	O 0 mSv	O 0 mSv [ped]	5	5	3	0	0	5	6	4	0	0	1
CTA head with IV contrast	Usually approp		Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	3	3	7	2	10	0	0	0	0	0	0
CT head without IV contrast	Usually approp		Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	3	3	7	2	8	1	0	1	0	0	0
CT head perfusion with IV contrast	Usually approp	y not riate	Limited	��� 1-10 mSv		2	2	9	2	4	2	2	0	0	0	0
			References		Study	Quality										
			124 (28255464)			2										_
Arteriography cervicocerebral	Usually approp		Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	2	2	9	1	3	1	4	1	0	0	0
MRA head without IV contrast	Usually approp		Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	8	3	8	0	0	0	0	0	0
MRI head perfusion with IV contrast	Usually approp		Limited	O 0 mSv	O 0 mSv [ped]	2	2	6	4	7	1	0	0	1	0	0
	•		References		Study	Quality										
			124 (28255464)			2										
CT head with IV contrast	Usually approp		Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	13	3	3	0	0	0	0	0	0

27 (19164440)

CT head without and with IV contrast	Usually not appropriate	Expert Consensus	≎⊛≎ 1-10 mSv	\$\$\$\$ 3- 10 mSv [ped]	1	1	11	5	2	0	1	0	0	0	0
MRA head without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	2	4	1	0	0	1	0	0
MRI head without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	1	5	0	2	0	0	0	0
US duplex Doppler transcranial	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	14	3	1	0	0	1	0	0	0
MRV head without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	14	3	2	0	0	0	0	0	0
CTV head with IV contrast	Usually not appropriate	Expert Consensus	୫୫୫ 1-10 mSv	���� 3- 10 mSv [ped]	1	1	14	3	2	0	0	0	0	0	0
MRV head without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	14	3	1	0	1	0	0	0	0

Variant 11: Adult. Suspected cervical vascular dissection or injury. Initial imaging.

D 1	Appropriaten	ess cor	SOE Adults RRL Peds RRL Rating Median							F	inal '	Гаbu	latio	ns		
Procedure	Category	SOE	Adults RR	L Peas	S KKL	Rating	Median	1	2	3	4	5	6	7	8	9
CTA neck with IV contrast	Usually appropriate	Limited	��� 1-10 mSv	3 3	≎ 0.3- mSv ped]	9	9	1	0	0	0	0	0	0	5	13
		References		Study												
		131 (27767400)			4											
		130 (18635617))			2										
		129 (29853818))			_										
MRA neck without and with IV contrast	Usually appropriate	Limited	Limited O 0 mSv			8	8	1	0	0	0	1	1	5	6	5
		References	•	Study	Quality											
		129 (29853818)			4											

132 (24384680) 2 CT head without IV contrast **₩₩** 0.3-**���** 1-10 Usually Expert 3 mSv 7 7 0 0 0 0 6 3 8 0 2 mSv appropriate Consensus [bed] MRA neck without IV contrast Usually O 0 mSv O 0 mSv 7 7 0 0 5 3 0 0 0 10 Limited appropriate [ped] References Study Quality 129 (29853818) 4 2 132 (24384680) CTA head with IV contrast **∞∞∞∞** 3-May be **२० २०** 1-10 Expert 13 10 mSv 5 5 0 0 0 1 3 1 0 appropriate mSv Consensus [ped] MRA head without IV contrast O 0 mSv May be Expert 2 O 0 mSv 5 5 0 3 2 0 1 11 0 0 appropriate Consensus [ped] MRI head without IV contrast May be O 0 mSv Expert O 0 mSv 5 5 0 0 0 13 3 0 Consensus [ped] appropriate Arteriography cervicocerebral **����** 3-Usually not **२ २ २** 1-10 10 mSv 2 2 9 4 6 0 0 0 0 0 0 Strong mSv appropriate [ped] References Study Quality 128 (26478890) 4 127 (22198988) 2 126 (10568710) 2 **∞∞∞** 0.3-CT head with IV contrast **२० २०** 1-10 Usually not Expert 3 mSv 12 3 3 0 0 0 0 0 1 mSv appropriate Consensus [ped] CT head without and with IV ₩₩₩ 3-Usually not **२० २०** 1-10 Expert 13 3 0 0 0 10 mSv 1 2 0 0 contrast mSv appropriate Consensus [ped] CT head perfusion with IV Usually not **���** 1-10 Expert 12 2 1 4 0 0 0 0 0 contrast appropriate mSv Consensus MRA head without and with IV Usually not O 0 mSv Expert 13 2 0 0 2 0 2 0 0 O 0 mSv 1 contrast appropriate Consensus [ped]

MRI head without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	13	2	4	0	0	0	0	0	0
MRI head perfusion with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	2	4	1	1	0	0	0	0
US duplex Doppler carotid artery	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	14	4	1	0	0	0	0	0	0
US duplex Doppler transcranial	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	15	2	1	0	0	1	0	0	0
MRV head without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	15	3	1	0	0	0	0	0	0
CTV head with IV contrast	Usually not appropriate	Expert Consensus	୫୫୫ 1-10 mSv	���� 3- 10 mSv [ped]	1	1	13	4	0	0	2	0	0	0	0
MRV head without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	14	4	1	0	0	0	0	0	0

Variant 12: Adult. Known cervical vascular dissection or injury. Surveillance imaging.

D 1	Appropri	ateness	SOE Adults RRL Peds RRL Rating Median					ting Median			F	inal '	Fabu l	latio	ns		
Procedure	Categ		SOE	Adults RR	KL .	Peas RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CTA neck with IV contrast	Usua approp		Limited	��� 1-1 mSv	0	��� 0.3- 3 mSv [ped]	9	9	1	0	0	0	0	1	2	2	13
			References		Study												
			131 (27767400)				4										
			130 (18635617))			2										
			129 (29853818))													
MRA neck without IV contrast	Usua approp		Limited	Limited O 0 mSv		O 0 mSv [ped]	7	7	0	1	0	1	0	3	12	0	2
			References			Study	Quality										
			129 (29853818)				4										

		132 (24384680))												
MRA neck without and with IV contrast	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	7	7	0	0	0	0	0	3	11	3	2
		References		Study	y Quality										
		129 (29853818))		4										
		132 (24384680))		2	,									
MRA head without IV contrast	May be appropriate (Disagreement)	Expert Opinion	O 0 mSv	O 0 mSv [ped]	5	5	3	2	0	9	2	3	0	0	0
CTA head with IV contrast	May be appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	4	4	1	1	1	9	5	2	0	0	0
Arteriography cervicocerebral	May be appropriate	Expert Consensus	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	4	4	1	0	1	9	6	2	0	0	0
CT head without IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv	��� 0.3- 3 mSv [ped]	3	3	7	2	5	0	4	1	0	0	0
MRI head without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	3	3	6	1	3	9	0	0	0	0	0
US duplex Doppler carotid artery	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	2	2	9	6	2	2	0	0	0	0	0
		References		Study	y Quality										
		137 (20962286))		2										
CT head with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	14	4	1	0	0	0	0	0	0
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	1	1	14	3	2	0	0	0	0	0	0
CT head perfusion with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	11	3	4	1	0	0	0	0	0
MRA head without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	14	4	1	0	0	0	0	0	0

MRI head without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	2	1	1	2	2	0	0	0
MRI head perfusion with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	3	3	1	0	1	0	0	0
US duplex Doppler transcranial	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	12	2	2	0	1	2	0	0	0
MRV head without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	15	3	1	0	0	0	0	0	0
CTV head with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	14	2	3	0	0	0	0	0	0
MRV head without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	15	3	0	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.