

American College of Radiology
ACR Appropriateness Criteria®

Cranial Neuropathy

Variant 1: Anosmia or other abnormalities of the sense of smell (olfactory nerve, CN I). Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI orbits face neck without and with IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	2	0	1	4	13
		References		Study Quality											
		49 (20472036)		3											
		39 (25712545)		2											
		41 (29269404)		2											
		55 (29324366)		2											
		54 (25977168)		2											
		29 (23775878)		4											
		4 (29088516)		4											
		50 (21330398)		2											
		51 (22730050)		2											
		52 (23376116)		2											
		53 (24051351)		2											
		56 (33132007)		4											
		CT maxillofacial with IV contrast	May be appropriate	Strong	☼☼☼ 0.1-1mSv	☼☼☼☼ 0.3-3 mSv [ped]	6	6	0	0	1	4	3	11	1
		References		Study Quality											
		39 (25712545)		2											
		41 (29269404)		2											

		40 (26743838)	2												
		31 (24402746)	2												
		29 (23775878)	4												
		4 (29088516)	4												
CT maxillofacial without IV contrast	May be appropriate	Strong	☼☼ 0.1-1mSv	☼☼☼ 0.3-3 mSv [ped]	6	6	0	0	0	4	6	8	1	1	0
		References		Study Quality											
		39 (25712545)		2											
		41 (29269404)		2											
		40 (26743838)		2											
		31 (24402746)		2											
		29 (23775878)		4											
		4 (29088516)		4											
MRI orbits face neck without IV contrast	May be appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	6	6	1	0	0	1	5	11	2	0	0
		References		Study Quality											
		49 (20472036)		3											
		39 (25712545)		2											
		41 (29269404)		2											
		55 (29324366)		2											
		54 (25977168)		2											
		29 (23775878)		4											
		4 (29088516)		4											
		50 (21330398)		2											
		51 (22730050)		2											
		52 (23376116)		2											
		53 (24051351)		2											
		56 (33132007)		4											
MRI head without and with IV contrast	May be appropriate (Disagreement)	Expert Opinion	○ 0 mSv	○ 0 mSv [ped]	5	5	7	4	4	0	0	3	2	0	0

CT head with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	2	2	10	2	4	1	2	1	0	0	0
CT head without IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	2	2	9	9	1	0	1	0	0	0	0
MRI head without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	8	3	4	1	3	1	0	0	0
CTA head with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	15	2	2	1	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	13	1	4	0	0	2	0	0	0
CT maxillofacial without and with IV contrast	Usually not appropriate	Strong	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	1	1	16	1	3	0	0	0	0	0	0

References	Study Quality
39 (25712545)	2
41 (29269404)	2
40 (26743838)	2
31 (24402746)	2
29 (23775878)	4
4 (29088516)	4

MRA head without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	15	3	1	0	1	0	0	0	0
MRA head without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	17	1	0	0	0	1	0	0	1
FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Strong	☹☹☹☹ 10-30 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	18	2	0	0	0	0	0	0	0

References	Study Quality
42 (20709038)	3
48 (30409849)	1

[illegible]

Variant 2: Unilateral isolated weakness of the mastication muscles, paralysis of the mastication muscles, sensory abnormalities of the face and head, facial numbness, or trigeminal neuralgia (trigeminal nerve, CN V). Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI orbits face neck without and with IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	9	9	0	0	1	0	2	1	3	0	13
	References		Study Quality												
	69 (21346659)		2												
	73 (25541189)		2												
	71 (23022639)		2												
	72 (23098388)		2												
	82 (16436823)		4												
	68 (21062923)		2												
	70 (22405984)		4												
	86 (24390084)		2												
	87 (26406792)		2												
	75 (29425330)		2												
	93 (30117773)		2												
	23 (30139749)		2												
	91 (29397449)		2												
	90 (29305127)		2												
	96 (29105886)		2												
	74 (29388798)		2												
	89 (28702348)		2												
	97 (29931400)		2												
	76 (29476993)		2												
	92 (29410338)		2												
	77 (28481804)		4												
	94 (26899433)		2												
	95 (27779254)		2												
	98 (26795500)		2												
	88 (26733127)		2												
	81 (26476278)		2												

95 (27779254)	2
98 (26795500)	2
88 (26733127)	2
81 (26476278)	2
78 (26519891)	2
80 (25442253)	2
85 (25008460)	2
79 (24745706)	2
83 (24210310)	4
84 (31537003)	2

MRI orbits face neck without IV contrast	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	6	6	1	0	1	4	4	7	2	0	1
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References	Study Quality
69 (21346659)	2
73 (25541189)	2
71 (23022639)	2
72 (23098388)	2
82 (16436823)	4
68 (21062923)	2
70 (22405984)	4
86 (24390084)	2
87 (26406792)	2
75 (29425330)	2
93 (30117773)	2
23 (30139749)	2
91 (29397449)	2
90 (29305127)	2
96 (29105886)	2
74 (29388798)	2
89 (28702348)	2
97 (29931400)	2

76 (29476993)	2
92 (29410338)	2
77 (28481804)	4
94 (26899433)	2
95 (27779254)	2
98 (26795500)	2
88 (26733127)	2
81 (26476278)	2
78 (26519891)	2
80 (25442253)	2
85 (25008460)	2
79 (24745706)	2
83 (24210310)	4
84 (31537003)	2

CT maxillofacial with IV contrast	May be appropriate	Strong	☼☼ 0.1-1mSv	☼☼☼ 0.3-3 mSv [ped]	5	5	0	0	0	3	11	6	0	0	0
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References	Study Quality
66 (27890182)	4
67 (21538196)	2
64 (14736668)	4
65 (17576903)	2

CT maxillofacial without IV contrast	May be appropriate	Strong	☼☼ 0.1-1mSv	☼☼☼ 0.3-3 mSv [ped]	5	5	1	0	0	5	11	3	0	0	0
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References	Study Quality
66 (27890182)	4
67 (21538196)	2
64 (14736668)	4
65 (17576903)	2

MRA head without IV contrast	May be appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	5	5	4	2	1	2	10	1	0	0	0
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References	Study Quality
69 (21346659)	2
73 (25541189)	2
71 (23022639)	2
72 (23098388)	2
76 (29476993)	2

MRA head without and with IV contrast	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	5	5	4	2	1	2	10	1	0	0	0
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References	Study Quality
69 (21346659)	2
73 (25541189)	2
71 (23022639)	2
72 (23098388)	2
76 (29476993)	2

MRI head without IV contrast	May be appropriate (Disagreement)	Expert Opinion	O 0 mSv	O 0 mSv [ped]	5	5	1	2	0	1	8	6	2	0	0
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References	Study Quality
69 (21346659)	2
73 (25541189)	2
71 (23022639)	2
72 (23098388)	2
82 (16436823)	4
68 (21062923)	2
70 (22405984)	4
86 (24390084)	2
87 (26406792)	2
75 (29425330)	2
93 (30117773)	2
23 (30139749)	2
91 (29397449)	2
90 (29305127)	2

96 (29105886)	2
74 (29388798)	2
89 (28702348)	2
97 (29931400)	2
76 (29476993)	2
92 (29410338)	2
77 (28481804)	4
94 (26899433)	2
95 (27779254)	2
98 (26795500)	2
88 (26733127)	2
81 (26476278)	2
78 (26519891)	2
80 (25442253)	2
85 (25008460)	2
79 (24745706)	2
83 (24210310)	4
84 (31537003)	2

MRA head with IV contrast	May be appropriate	Strong	0 0 mSv	0 0 mSv [ped]	5	5	4	1	3	1	10	1	0	0	0
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References	Study Quality
69 (21346659)	2
73 (25541189)	2
71 (23022639)	2
72 (23098388)	2
76 (29476993)	2

CTA head with IV contrast	Usually not appropriate	Strong	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	3	3	8	2	4	2	2	1	1	0	0
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References	Study Quality
69 (21346659)	2
73 (25541189)	2

71 (23022639)	2
72 (23098388)	2
68 (21062923)	2
70 (22405984)	4
75 (29425330)	2
23 (30139749)	2
74 (29388798)	2
76 (29476993)	2
77 (28481804)	4

CT head with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	2	2	10	3	5	1	1	0	0	0	0
CT head without IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	2	2	8	3	5	2	1	0	1	0	0
MRI head with IV contrast	Usually not appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	2	2	9	5	2	1	1	1	0	0	1

References	Study Quality
69 (21346659)	2
73 (25541189)	2
71 (23022639)	2
72 (23098388)	2
82 (16436823)	4
68 (21062923)	2
70 (22405984)	4
86 (24390084)	2
87 (26406792)	2
75 (29425330)	2
93 (30117773)	2
23 (30139749)	2
91 (29397449)	2
90 (29305127)	2

96 (29105886)	2
74 (29388798)	2
89 (28702348)	2
97 (29931400)	2
76 (29476993)	2
92 (29410338)	2
77 (28481804)	4
94 (26899433)	2
95 (27779254)	2
98 (26795500)	2
88 (26733127)	2
81 (26476278)	2
78 (26519891)	2
80 (25442253)	2
85 (25008460)	2
79 (24745706)	2
83 (24210310)	4
84 (31537003)	2

MRI orbits face neck with IV contrast	Usually not appropriate	Strong	O 0 mSv	O 0 mSv [ped]	2	2	10	5	1	1	2	0	0	0	1
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References	Study Quality
69 (21346659)	2
73 (25541189)	2
71 (23022639)	2
72 (23098388)	2
82 (16436823)	4
68 (21062923)	2
70 (22405984)	4
86 (24390084)	2
87 (26406792)	2
75 (29425330)	2

93 (30117773)	2
23 (30139749)	2
91 (29397449)	2
90 (29305127)	2
96 (29105886)	2
74 (29388798)	2
89 (28702348)	2
97 (29931400)	2
76 (29476993)	2
92 (29410338)	2
77 (28481804)	4
94 (26899433)	2
95 (27779254)	2
98 (26795500)	2
88 (26733127)	2
81 (26476278)	2
78 (26519891)	2
80 (25442253)	2
85 (25008460)	2
79 (24745706)	2
83 (24210310)	4
84 (31537003)	2

CT head without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	13	4	1	0	1	1	0	0	0
CT maxillofacial without and with IV contrast	Usually not appropriate	Strong	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	13	2	1	1	3	0	0	0	0

References	Study Quality
66 (27890182)	4
67 (21538196)	2
64 (14736668)	4

		65 (17576903)		2												
FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Expert Consensus	⊕⊕⊕⊕ 10-30 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	1	1	19	0	1	0	0	0	0	0	0	0
US neck	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	19	0	0	0	1	0	0	0	0	0

Variant 3: Unilateral isolated weakness of the facial expression, paralysis of the facial expression, hemifacial spasm, or Bell palsy (facial nerve, CN VII). Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI head without and with IV contrast	Usually appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	9	9	0	0	0	0	0	2	3	4	11

References	Study Quality
121 (22784861)	3
106 (24518410)	4
118 (11960404)	2
119 (14699179)	2
111 (19546177)	4
110 (25795466)	2
123 (9576658)	2
104 (30717625)	2
115 (30139756)	4
128 (29490547)	4
20 (29927823)	2
130 (29633003)	2
76 (29476993)	2
122 (29135869)	2
107 (28826862)	2
114 (28696161)	2
127 (27625239)	2

126 (26905823)	2
129 (26449562)	2
78 (26519891)	2
101 (25430858)	2
100 (25044001)	2
113 (24758667)	2
124 (20645285)	2
19 (23578676)	2
112 (22207300)	2
7 (18596507)	4
125 (26178307)	2
65 (17576903)	2
102 (24431233)	4
116 (31624121)	4
117 (2114760)	4
120 (18618345)	2

MRI orbits face neck without and with IV contrast	Usually appropriate	Strong	0 0 mSv	0 0 mSv [ped]	9	9	0	2	0	0	1	1	1	3	12
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References	Study Quality
121 (22784861)	3
106 (24518410)	4
118 (11960404)	2
119 (14699179)	2
111 (19546177)	4
110 (25795466)	2
123 (9576658)	2
104 (30717625)	2
115 (30139756)	4
128 (29490547)	4
20 (29927823)	2
130 (29633003)	2

76 (29476993)	2
122 (29135869)	2
107 (28826862)	2
114 (28696161)	2
127 (27625239)	2
126 (26905823)	2
129 (26449562)	2
78 (26519891)	2
101 (25430858)	2
100 (25044001)	2
113 (24758667)	2
124 (20645285)	2
19 (23578676)	2
112 (22207300)	2
7 (18596507)	4
125 (26178307)	2
65 (17576903)	2
102 (24431233)	4
116 (31624121)	4
117 (2114760)	4
120 (18618345)	2

CT temporal bone without IV contrast	May be appropriate	Strong	☢☢☢ 1-10 mSv		6	6	1	0	1	0	4	7	3	1	3
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References	Study Quality
106 (24518410)	4
107 (28826862)	2
2 (24210311)	4
99 (26001250)	4
105 (24081792)	2
108 (29258690)	4

MRI head without IV contrast	May be appropriate	Strong	0 0 mSv	0 0 mSv [ped]	6	6	1	0	0	0	8	5	5	1	0
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References	Study Quality
121 (22784861)	3
106 (24518410)	4
118 (11960404)	2
119 (14699179)	2
111 (19546177)	4
110 (25795466)	2
123 (9576658)	2
104 (30717625)	2
115 (30139756)	4
128 (29490547)	4
20 (29927823)	2
130 (29633003)	2
76 (29476993)	2
122 (29135869)	2
107 (28826862)	2
114 (28696161)	2
127 (27625239)	2
126 (26905823)	2
129 (26449562)	2
78 (26519891)	2
101 (25430858)	2
100 (25044001)	2
113 (24758667)	2
124 (20645285)	2
19 (23578676)	2
112 (22207300)	2
7 (18596507)	4
125 (26178307)	2

		102 (24431233)			4											
MRA head without and with IV contrast	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	5	5	4	1	1	4	9	1	0	0	0	
		References		Study Quality												
		110 (25795466)		2												
		103 (30446207)		2												
		76 (29476993)		2												
		109 (27178237)		2												
		102 (24431233)		4												
MRI orbits face neck without IV contrast	May be appropriate (Disagreement)	Expert Opinion	O 0 mSv	O 0 mSv [ped]	5	5	2	1	0	3	7	7	0	0	0	
		References		Study Quality												
		121 (22784861)		3												
		106 (24518410)		4												
		118 (11960404)		2												
		119 (14699179)		2												
		111 (19546177)		4												
		110 (25795466)		2												
		123 (9576658)		2												
		104 (30717625)		2												
		115 (30139756)		4												
		128 (29490547)		4												
		20 (29927823)		2												
		130 (29633003)		2												
		76 (29476993)		2												
		122 (29135869)		2												
		107 (28826862)		2												
		114 (28696161)		2												
		127 (27625239)		2												
		126 (26905823)		2												
		129 (26449562)		2												

78 (26519891)	2
101 (25430858)	2
100 (25044001)	2
113 (24758667)	2
124 (20645285)	2
19 (23578676)	2
112 (22207300)	2
7 (18596507)	4
125 (26178307)	2
65 (17576903)	2
102 (24431233)	4
116 (31624121)	4
117 (2114760)	4
120 (18618345)	2

MRA head with IV contrast	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	5	5	4	0	1	4	10	1	0	0	0
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References	Study Quality
110 (25795466)	2
103 (30446207)	2
76 (29476993)	2
109 (27178237)	2
102 (24431233)	4

CT maxillofacial without IV contrast	May be appropriate	Strong	☢☢☢ 0.1-1mSv	☢☢☢☢ 0.3-3 mSv [ped]	4	4	1	0	3	7	7	2	0	0	0
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References	Study Quality
106 (24518410)	4
107 (28826862)	2
2 (24210311)	4
99 (26001250)	4
105 (24081792)	2
108 (29258690)	4

MRI head with IV contrast	Usually not appropriate	Strong	0 0 mSv	0 0 mSv [ped]	2	2	9	6	2	1	1	0	0	0	1
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References	Study Quality
121 (22784861)	3
106 (24518410)	4
118 (11960404)	2
119 (14699179)	2
111 (19546177)	4
110 (25795466)	2
123 (9576658)	2
104 (30717625)	2
115 (30139756)	4
128 (29490547)	4
20 (29927823)	2
130 (29633003)	2
76 (29476993)	2
122 (29135869)	2
107 (28826862)	2
114 (28696161)	2
127 (27625239)	2
126 (26905823)	2
129 (26449562)	2
78 (26519891)	2
101 (25430858)	2
100 (25044001)	2
113 (24758667)	2
124 (20645285)	2
19 (23578676)	2
112 (22207300)	2
7 (18596507)	4
125 (26178307)	2

[illegible]

124 (20645285)	2
19 (23578676)	2
112 (22207300)	2
7 (18596507)	4
125 (26178307)	2
65 (17576903)	2
102 (24431233)	4
116 (31624121)	4
117 (2114760)	4
120 (18618345)	2

CTA head with IV contrast	Usually not appropriate	Strong	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	11	4	2	0	2	0	1	0	0
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References	Study Quality
103 (30446207)	2
109 (27178237)	2
102 (24431233)	4

CT temporal bone without and with IV contrast	Usually not appropriate	Strong	☹☹☹ 1-10 mSv		1	1	13	2	0	1	2	1	1	0	0
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References	Study Quality
106 (24518410)	4
107 (28826862)	2
2 (24210311)	4
99 (26001250)	4
105 (24081792)	2
108 (29258690)	4

CT head with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	1	1	15	3	0	1	1	0	0	0	0
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CT head without IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	1	1	13	0	0	4	2	0	1	0	0
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		138 (28413710)			2											
MRI orbits face neck without and with IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	9	9	0	1	0	0	0	2	2	4	11	
		References			Study Quality											
		2 (24210311)			4											
		83 (24210310)			4											
		136 (20383633)			4											
		131 (31283463)			4											
		134 (24216451)			4											
		137 (21376629)			2											
		138 (28413710)			2											
MRI head without IV contrast	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	6	6	0	1	0	0	7	7	4	1	0	
		References			Study Quality											
		2 (24210311)			4											
		83 (24210310)			4											
		136 (20383633)			4											
		131 (31283463)			4											
		134 (24216451)			4											
		137 (21376629)			2											
		138 (28413710)			2											
CT head without IV contrast	May be appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 0.3-3 mSv [ped]	5	5	1	1	0	3	12	2	0	1	0	
MRI orbits face neck without IV contrast	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	5	5	2	0	0	1	9	7	1	0	0	
		References			Study Quality											
		2 (24210311)			4											
		83 (24210310)			4											
		136 (20383633)			4											
		131 (31283463)			4											

		134 (24216451)	4												
		137 (21376629)	2												
		138 (28413710)	2												
CT temporal bone without IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv		3	3	7	3	5	3	2	0	0	0	0
		References	Study Quality												
		134 (24216451)	4												
CT maxillofacial with IV contrast	Usually not appropriate	Limited	☹☹ 0.1-1mSv	☹☹☹ 0.3-3 mSv [ped]	3	3	7	2	4	1	5	1	0	0	0
		References	Study Quality												
		134 (24216451)	4												
CT neck with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	3	3	6	3	3	1	6	1	0	0	0
		References	Study Quality												
		66 (27890182)	4												
		64 (14736668)	4												
CTA head with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	2	2	10	2	3	2	2	1	0	0	0
		References	Study Quality												
		131 (31283463)	4												
		132 (16286545)	4												
		135 (20483390)	4												
CT temporal bone with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv		2	2	8	4	4	2	2	0	0	0	0
		References	Study Quality												
		134 (24216451)	4												
CT head with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	2	2	10	3	3	0	4	0	0	0	0

CT maxillofacial without IV contrast	Usually not appropriate	Limited	☹☹ 0.1-1mSv	☹☹☹ 0.3-3 mSv [ped]	2	2	8	3	4	1	2	1	0	1	0
		References	Study Quality												
		134 (24216451)	4												
CT neck without IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	2	2	10	3	5	2	0	0	0	0	0
		References	Study Quality												
		66 (27890182)	4												
		64 (14736668)	4												
CT temporal bone without and with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv		1	1	14	2	2	1	1	0	0	0	0
		References	Study Quality												
		134 (24216451)	4												
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	13	2	2	0	2	0	1	0	0
CT maxillofacial without and with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	1	1	13	2	1	0	2	1	1	0	0
		References	Study Quality												
		134 (24216451)	4												
CT neck without and with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	11	2	1	2	4	0	0	0	0
		References	Study Quality												
		66 (27890182)	4												
		64 (14736668)	4												
MRA head without IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	11	3	1	2	2	0	1	0	0
		References	Study Quality												
		131 (31283463)	4												
		132 (16286545)	4												

2 (24210311)	4
83 (24210310)	4
136 (20383633)	4
131 (31283463)	4
134 (24216451)	4
137 (21376629)	2
138 (28413710)	2

Variant 5: Oropharyngeal neurogenic dysphagia or oropharyngeal pain (glossopharyngeal nerve, CN IX). Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI orbits face neck without and with IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	2	2	1	4	11
		References		Study Quality											
		24 (18832666)		3											
		150 (21567138)		3											
		149 (19199448)		3											
		151 (30102011)		4											
		143 (28263933)		2											
		2 (24210311)		4											
MRI head without and with IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	8	8	1	0	0	0	2	3	3	4	7
		References		Study Quality											
		24 (18832666)		3											
		150 (21567138)		3											
		149 (19199448)		3											
		151 (30102011)		4											
		143 (28263933)		2											
		2 (24210311)		4											

CT neck with IV contrast	May be appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	6	6	2	0	0	0	7	3	2	3	3
		References	Study Quality												
		142 (25917666)	4												
		148 (25769354)	4												
		144 (6308990)	4												
		145 (10871029)	4												
		146 (14736665)	4												
		147 (19568338)	4												
MRI head without IV contrast	May be appropriate	Strong	☺☺☺ 0 mSv	☺☺☺ 0 mSv [ped]	6	6	1	0	0	2	6	7	4	0	0
		References	Study Quality												
		24 (18832666)	3												
		150 (21567138)	3												
		149 (19199448)	3												
		151 (30102011)	4												
		143 (28263933)	2												
		2 (24210311)	4												
MRI orbits face neck without IV contrast	May be appropriate	Strong	☺☺☺ 0 mSv	☺☺☺ 0 mSv [ped]	5	5	2	0	0	2	7	7	2	0	0
		References	Study Quality												
		24 (18832666)	3												
		150 (21567138)	3												
		149 (19199448)	3												
		151 (30102011)	4												
		143 (28263933)	2												
		2 (24210311)	4												
CT neck without IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	3	3	3	2	7	3	3	2	0	0	0
		References	Study Quality												

142 (25917666)	4
148 (25769354)	4
144 (6308990)	4
145 (10871029)	4
146 (14736665)	4
147 (19568338)	4

MRA head and neck without IV contrast	Usually not appropriate	Strong	O 0 mSv	O 0 mSv [ped]	3	3	7	1	7	1	2	1	1	0	0
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References	Study Quality
24 (18832666)	3
150 (21567138)	3
149 (19199448)	3
143 (28263933)	2

CTA head and neck with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	10	3	2	1	2	1	0	0	1
CT temporal bone with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv		1	1	15	2	2	0	0	1	0	0	0
CT temporal bone without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv		1	1	14	3	2	0	1	0	0	0	0
CT temporal bone without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv		1	1	15	2	2	0	0	1	0	0	0
CT head with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	14	1	1	2	0	1	0	0	1
CT head without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	14	1	2	1	1	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	2	1	0	1	1	0	0	1
CT maxillofacial with IV contrast	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	14	2	0	1	1	2	0	0	0

CT maxillofacial without IV contrast	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	15	1	2	2	0	0	0	0	0
CT maxillofacial without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	15	1	2	0	1	1	0	0	0
CT neck without and with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	12	1	0	4	1	1	0	0	1

References	Study Quality
142 (25917666)	4
148 (25769354)	4
144 (6308990)	4
145 (10871029)	4
146 (14736665)	4
147 (19568338)	4

MRA head and neck without and with IV contrast	Usually not appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	1	1	11	3	4	1	1	0	0	0	0
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References	Study Quality
24 (18832666)	3
150 (21567138)	3
149 (19199448)	3
143 (28263933)	2

FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	16	4	0	0	0	0	0	0	0
US neck	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	18	1	0	0	1	0	0	0	0
MRI head with IV contrast	Usually not appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	1	1	12	3	1	2	1	0	0	0	1

References	Study Quality
24 (18832666)	3
150 (21567138)	3

[illegible]

Variant 6: Unilateral isolated palatal or vocal cord paralysis or both (vagal nerve, CN X). Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CT neck with IV contrast	Usually appropriate	Strong	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	8	8	0	0	0	1	0	3	3	4	9
		References		Study Quality											
		156 (27670956)		4											
		153 (16301111)		3											

MRI orbits face neck without IV contrast	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	1	7	7	4	0	1
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References	Study Quality
24 (18832666)	3
150 (21567138)	3
149 (19199448)	3
151 (30102011)	4
143 (28263933)	2
83 (24210310)	4

CT neck without IV contrast	May be appropriate	Strong	⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	5	5	2	0	0	5	9	3	1	0	0
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References	Study Quality
156 (27670956)	4
153 (16301111)	3
155 (27601300)	2
162 (27085701)	2
160 (25518905)	4
163 (31485732)	4
131 (31283463)	4
152 (22582356)	4
157 (29785934)	4
159 (22965930)	4
161 (26156423)	4

MRI head without IV contrast	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	5	5	1	0	0	4	10	4	1	0	0
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References	Study Quality
24 (18832666)	3
150 (21567138)	3
149 (19199448)	3
151 (30102011)	4
143 (28263933)	2

		83 (24210310)		4												
CT chest without IV contrast	May be appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	4	4	1	1	1	8	7	2	0	0	0	
		References		Study Quality												
		158 (23479100)		4												
CT chest without and with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	3	1	2	0	0	0	0	0	
		References		Study Quality												
		158 (23479100)		4												
CT temporal bone with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv		1	1	16	1	0	3	0	0	0	0	0	
CT temporal bone without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv		1	1	15	2	1	2	0	0	0	0	0	
CT temporal bone without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv		1	1	16	1	0	3	0	0	0	0	0	
CT head with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	15	1	2	2	0	0	0	0	0	
CT head without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	14	1	1	3	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	2	0	2	2	0	0	0	0	
CTA head and neck with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	12	1	2	2	2	0	0	0	0	1
CT maxillofacial with IV contrast	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	12	3	1	1	1	1	0	1	0	
CT maxillofacial without IV contrast	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	15	1	3	0	1	0	0	0	0	

CT maxillofacial without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	14	1	2	1	1	1	0	0	0
CT neck without and with IV contrast	Usually not appropriate	Strong	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	12	5	1	1	0	0	0	0	1

References	Study Quality
156 (27670956)	4
153 (16301111)	3
155 (27601300)	2
162 (27085701)	2
160 (25518905)	4
163 (31485732)	4
131 (31283463)	4
152 (22582356)	4
157 (29785934)	4
159 (22965930)	4
161 (26156423)	4

MRA head and neck without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	13	3	2	0	1	1	0	0	0
MRA head and neck without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	13	3	2	0	0	0	1	0	1
FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	16	2	1	0	0	1	0	0	0

References	Study Quality
165 (11348849)	4
166 (12091675)	3
167 (28636732)	1
164 (24491410)	4
152 (22582356)	4

US neck	Usually not appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	1	1	11	7	2	0	0	0	0	0	0
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References	Study Quality
174 (30577987)	2
173 (30460501)	4
172 (30353405)	4
171 (29678501)	2
170 (27871685)	2
158 (23479100)	4
157 (29785934)	4
169 (2863145)	4

Radiography chest	Usually not appropriate	Limited	☼ <0.1 mSv	☼ <0.03 mSv [ped]	1	1	12	3	3	1	1	0	0	0	0
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References	Study Quality
158 (23479100)	4
168 (21786449)	4

MRI head with IV contrast	Usually not appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	1	1	11	4	1	2	2	0	0	0	0
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References	Study Quality
24 (18832666)	3
150 (21567138)	3
149 (19199448)	3
151 (30102011)	4
143 (28263933)	2
83 (24210310)	4

MRA head and neck with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	13	3	2	0	0	0	1	0	1
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MRI orbits face neck with IV contrast	Usually not appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	1	1	13	2	3	0	1	1	0	0	0
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References	Study Quality
24 (18832666)	3
150 (21567138)	3

149 (19199448)	3
151 (30102011)	4
143 (28263933)	2
83 (24210310)	4

Variant 7: Unilateral isolated weakness or paralysis of the sternocleidomastoid and trapezius muscles (accessory nerve, CN XI). Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI orbits face neck without and with IV contrast	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	0	2	5	13
		References		Study Quality											
		24 (18832666)		3											
		149 (19199448)		3											
		176 (26787069)		4											
		2 (24210311)		4											
		131 (31283463)		4											
CT neck with IV contrast	Usually appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	8	8	0	0	0	1	1	1	7	4	6
		References		Study Quality											
		2 (24210311)		4											
MRI head without and with IV contrast	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	8	8	0	1	0	0	1	3	4	5	6
		References		Study Quality											
		24 (18832666)		3											
		149 (19199448)		3											
		2 (24210311)		4											
		131 (31283463)		4											
MRI orbits face neck without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	6	6	1	0	0	3	4	5	5	2	0

		References		Study Quality													
		24 (18832666)		3													
		149 (19199448)		3													
		176 (26787069)		4													
		2 (24210311)		4													
		131 (31283463)		4													
CT neck without IV contrast	May be appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	5	5	0	0	1	2	11	6	0	0	0		
		References		Study Quality													
		2 (24210311)		4													
MRI head without IV contrast	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	5	5	0	0	1	1	12	5	1	0	0		
		References		Study Quality													
		24 (18832666)		3													
		149 (19199448)		3													
		2 (24210311)		4													
		131 (31283463)		4													
CT temporal bone with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv		1	1	15	2	2	0	1	0	0	0	0		
CT temporal bone without IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv		1	1	16	1	2	1	0	0	0	0	0		
CT temporal bone without and with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv		1	1	16	1	1	1	1	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	1	3	0	0	2	0	0	0		
CT head without IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	1	1	15	1	1	1	1	1	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	2	1	0	2	1	0	0	0		

CTA head and neck with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	15	2	0	1	2	0	0	0	0
CT maxillofacial with IV contrast	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	15	2	0	1	1	1	0	0	0
CT maxillofacial without IV contrast	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	16	2	0	2	0	0	0	0	0
CT maxillofacial without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	15	2	0	0	2	1	0	0	0
CT neck without and with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	15	4	1	0	0	0	0	0	0

References	Study Quality
2 (24210311)	4

MRA head and neck without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	15	2	0	0	2	0	1	0	0
MRA head and neck without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	16	2	1	1	0	0	0	0	0
US neck	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	11	4	5	0	0	0	0	0	0

References	Study Quality
180 (30216471)	4
179 (26543166)	4
178 (22261590)	4
177 (21596503)	4

MRI head with IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	12	4	1	3	0	0	0	0	0
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References	Study Quality
24 (18832666)	3
149 (19199448)	3
2 (24210311)	4

		131 (31283463)		4											
MRA head and neck with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	16	1	1	1	0	0	0	0	1
MRA head and neck with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	15	2	1	0	1	0	0	0	1
MRI orbits face neck with IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	12	5	1	2	0	0	0	0	0
		References		Study Quality											
		24 (18832666)		3											
		149 (19199448)		3											
		176 (26787069)		4											
		2 (24210311)		4											
		131 (31283463)		4											

Variant 8: Unilateral isolated weakness or paralysis of the tongue (hypoglossal nerve, CN XII). Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI orbits face neck without and with IV contrast	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	1	1	1	5	12
		References		Study Quality											
		24 (18832666)		3											
		181 (12066914)		3											
		187 (30648931)		4											
		183 (25043533)		2											
		5 (24210309)		4											
		13 (28109859)		4											
		186 (23192210)		4											
		188 (9282872)		4											
		189 (18065504)		4											

CT neck with IV contrast	Usually appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	8	8	0	0	1	1	2	1	4	4	7
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References	Study Quality
181 (12066914)	3
183 (25043533)	2
5 (24210309)	4
13 (28109859)	4
189 (18065504)	4

MRI head without and with IV contrast	Usually appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	7	7	0	0	0	0	4	1	6	3	6
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References	Study Quality
24 (18832666)	3
181 (12066914)	3
187 (30648931)	4
183 (25043533)	2
5 (24210309)	4
13 (28109859)	4
186 (23192210)	4
188 (9282872)	4
189 (18065504)	4

MRI head without IV contrast	May be appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	6	6	1	0	0	4	5	6	4	0	0
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References	Study Quality
24 (18832666)	3
181 (12066914)	3
187 (30648931)	4
183 (25043533)	2
5 (24210309)	4
13 (28109859)	4
186 (23192210)	4
188 (9282872)	4

		189 (18065504)			4												
MRI orbits face neck without IV contrast	May be appropriate	Limited	0 0 mSv		0 0 mSv [ped]	6	6	1	0	0	2	7	3	6	1	0	
		References			Study Quality												
		24 (18832666)			3												
		181 (12066914)			3												
		187 (30648931)			4												
		183 (25043533)			2												
		5 (24210309)			4												
		13 (28109859)			4												
		186 (23192210)			4												
		188 (9282872)			4												
		189 (18065504)			4												
CTA head and neck with IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv		☢☢☢☢ 3-10 mSv [ped]	5	5	1	0	1	2	10	5	1	0	0	
		References			Study Quality												
		192 (19770343)			4												
		190 (24458034)			3												
		191 (18635617)			2												
CT neck without IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv		☢☢☢ 0.3-3 mSv [ped]	5	5	1	0	0	3	11	4	1	0	0	
		References			Study Quality												
		181 (12066914)			3												
		183 (25043533)			2												
		5 (24210309)			4												
		13 (28109859)			4												
		189 (18065504)			4												
MRA head and neck without IV contrast	May be appropriate	Limited	0 0 mSv		0 0 mSv [ped]	5	5	2	0	2	4	11	1	0	0	0	
		References			Study Quality												

		192 (19770343)		4											
		190 (24458034)		3											
		191 (18635617)		2											
MRA head and neck without and with IV contrast	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	5	5	2	0	2	5	9	2	0	0	0
		References		Study Quality											
		192 (19770343)		4											
		190 (24458034)		3											
		191 (18635617)		2											
MRA head and neck with IV contrast	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	5	5	2	0	2	4	9	2	1	0	0
		References		Study Quality											
		192 (19770343)		4											
		190 (24458034)		3											
		191 (18635617)		2											
MRI head with IV contrast	Usually not appropriate	Limited	0 0 mSv	0 0 mSv [ped]	2	2	10	3	2	2	3	0	0	0	0
		References		Study Quality											
		24 (18832666)		3											
		181 (12066914)		3											
		187 (30648931)		4											
		183 (25043533)		2											
		5 (24210309)		4											
		13 (28109859)		4											
		186 (23192210)		4											
		188 (9282872)		4											
		189 (18065504)		4											
CT temporal bone with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv		1	1	16	2	1	0	1	0	0	0	0
CT temporal bone without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv		1	1	15	3	1	1	0	0	0	0	0

CT temporal bone without and with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv		1	1	16	2	0	1	1	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	2	1	1	1	1	0	0	0
CT head without IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	1	1	15	2	0	2	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	0	0	2	1	0	0	0
CT maxillofacial with IV contrast	Usually not appropriate	Expert Consensus	☹☹ 0.1-1mSv	☹☹☹ 0.3-3 mSv [ped]	1	1	13	3	1	1	0	1	1	0	0
CT maxillofacial without IV contrast	Usually not appropriate	Expert Consensus	☹☹ 0.1-1mSv	☹☹☹ 0.3-3 mSv [ped]	1	1	14	2	2	2	0	0	0	0	0
CT maxillofacial without and with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	1	1	14	2	1	2	0	1	0	0	0
CT neck without and with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	14	5	0	1	0	0	0	0	0
		References		Study Quality											
		181 (12066914)		3											
		183 (25043533)		2											
		5 (24210309)		4											
		13 (28109859)		4											
		189 (18065504)		4											
FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Expert Consensus	☹☹☹☹ 10-30 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	16	3	0	0	1	0	0	0	0
US neck	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	14	3	0	0	1	1	1	0	0

MRI orbits face neck with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	13	2	3	0	2	0	0	0	0
		References	Study Quality												
		24 (18832666)	3												
		181 (12066914)	3												
		187 (30648931)	4												
		183 (25043533)	2												
		5 (24210309)	4												
		13 (28109859)	4												
		186 (23192210)	4												
		188 (9282872)	4												
		189 (18065504)	4												

Variant 9: Multiple different lower cranial nerve palsies or combined lower cranial nerve syndromes (CN IX-XII). Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI orbits face neck without and with IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	1	1	3	5	10
		References		Study Quality											
		24 (18832666)		3											
		149 (19199448)		3											
		2 (24210311)		4											
		83 (24210310)		4											
		136 (20383633)		4											
		131 (31283463)		4											
		134 (24216451)		4											
		137 (21376629)		2											
		138 (28413710)		2											
		194 (27324575)		1											

CT neck with IV contrast	Usually appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	8	8	0	0	0	2	3	2	2	5	6
		References		Study Quality											
		148 (25769354)		4											
		144 (6308990)		4											
		145 (10871029)		4											
		146 (14736665)		4											
		147 (19568338)		4											
MRI head without and with IV contrast	Usually appropriate	Strong	○ ○ mSv	○ ○ mSv [ped]	8	8	0	0	0	0	3	3	3	2	9
		References		Study Quality											
		24 (18832666)		3											
		149 (19199448)		3											
		2 (24210311)		4											
		83 (24210310)		4											
		136 (20383633)		4											
		131 (31283463)		4											
		134 (24216451)		4											
		137 (21376629)		2											
		138 (28413710)		2											
		194 (27324575)		1											
CTA head and neck with IV contrast	May be appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	5	5	0	0	0	3	12	4	1	0	0
		References		Study Quality											
		192 (19770343)		4											
		190 (24458034)		3											
		191 (18635617)		2											
		132 (16286545)		4											
CT neck without IV contrast	May be appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	5	5	2	0	3	3	9	2	1	0	0

		138 (28413710)		2											
		194 (27324575)		1											
MRI orbits face neck without IV contrast	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	5	5	1	0	0	2	9	7	1	0	0
		References		Study Quality											
		24 (18832666)		3											
		149 (19199448)		3											
		2 (24210311)		4											
		83 (24210310)		4											
		136 (20383633)		4											
		131 (31283463)		4											
		134 (24216451)		4											
		137 (21376629)		2											
		138 (28413710)		2											
		194 (27324575)		1											
MRA head and neck with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	1	0	2	1	13	2	1	0	0
		References		Study Quality											
		187 (30648931)		4											
		132 (16286545)		4											
		186 (23192210)		4											
		188 (9282872)		4											
CT temporal bone with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv		1	1	16	1	2	0	1	0	0	0	0
CT temporal bone without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv		1	1	15	1	1	3	0	0	0	0	0
CT temporal bone without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv		1	1	16	1	1	0	2	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	2	0	1	2	1	0	0	0

CT head without IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	1	1	14	2	0	2	1	0	0	1	0
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	14	2	1	0	2	0	1	0	0
CT maxillofacial with IV contrast	Usually not appropriate	Expert Consensus	☹☹ 0.1-1mSv	☹☹☹ 0.3-3 mSv [ped]	1	1	14	2	1	1	1	1	0	0	0
CT maxillofacial without IV contrast	Usually not appropriate	Expert Consensus	☹☹ 0.1-1mSv	☹☹☹ 0.3-3 mSv [ped]	1	1	14	2	4	0	0	0	0	0	0
CT maxillofacial without and with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	1	1	14	2	0	1	2	1	0	0	0
CT neck without and with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	15	4	1	0	0	0	0	0	0

References	Study Quality
148 (25769354)	4
144 (6308990)	4
145 (10871029)	4
146 (14736665)	4
147 (19568338)	4

FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Expert Consensus	☹☹☹☹ 10-30 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	16	1	2	1	0	0	0	0	0
US neck	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	16	0	1	1	1	1	0	0	0
MRI head with IV contrast	Usually not appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	1	1	11	3	4	1	0	0	0	0	1

References	Study Quality
24 (18832666)	3
149 (19199448)	3
2 (24210311)	4

MRI orbits face neck with IV contrast	Usually not appropriate																

Variant 10: Head and neck cancer. Suspected or known perineural spread of tumor. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI head without and with IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	9	9	0	1	0	0	2	0	3	4	10
		References		Study Quality											
		123 (9576658)		2											
		104 (30717625)		2											

[illegible]

		64 (14736668)		4											
		65 (17576903)		2											
CT temporal bone without IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv		1	1	11	2	4	1	2	0	0	0	0
		References		Study Quality											
		66 (27890182)		4											
		64 (14736668)		4											
CT temporal bone without and with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv		1	1	16	1	0	0	3	0	0	0	0
		References		Study Quality											
		66 (27890182)		4											
		64 (14736668)		4											
CT head with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	1	1	15	2	1	1	1	0	0	0	0
CT head without IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	1	1	15	3	0	2	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	15	2	0	0	3	0	0	0	0
CTA head and neck with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	15	2	2	0	0	1	0	0	0
CT maxillofacial without and with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	1	1	14	1	1	0	2	2	0	0	0
		References		Study Quality											
		66 (27890182)		4											
		64 (14736668)		4											
CT neck without and with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	15	3	2	0	0	0	0	0	0
		References		Study Quality											

66 (27890182)	4
64 (14736668)	4
65 (17576903)	2

MRA head and neck without IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	14	4	1	0	0	1	0	0	0
MRA head and neck without and with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	13	4	0	0	1	0	1	0	1
FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	15	3	2	0	0	0	0	0	0

References	Study Quality
197 (21220969)	4
195 (29086023)	2
164 (24491410)	4

US neck	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	15	5	0	0	0	0	0	0	0
MRI head with IV contrast	Usually not appropriate	Strong	0 0 mSv	0 0 mSv [ped]	1	1	13	2	2	0	2	1	0	0	0

References	Study Quality
123 (9576658)	2
104 (30717625)	2
130 (29633003)	2
124 (20645285)	2
125 (26178307)	2
164 (24491410)	4
65 (17576903)	2

MRA head and neck with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	13	4	1	0	0	0	1	0	1
MRI orbits face neck with IV contrast	Usually not appropriate	Strong	0 0 mSv	0 0 mSv [ped]	1	1	14	2	1	0	2	0	0	0	1

References	Study Quality
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123 (9576658)	2
104 (30717625)	2
130 (29633003)	2
124 (20645285)	2
125 (26178307)	2
164 (24491410)	4
65 (17576903)	2

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.