

American College of Radiology ACR Appropriateness Criteria®

Horner Syndrome

Variant 1: Adult. Acute onset Horner syndrome with or without localizing neurological signs or symptoms. History of recent trauma or painful. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CT head without IV contrast and CTA head and neck with IV contrast	Usually appropriate	Limited	⊕⊕⊕⊕ 10-30 mSv		9	9	1	0	0	0	2	1	0	3	12
		References		Study Quality											
		31 (22633727)		4											
		30 (11778813)		4											
		10 (18790590)		4											
		11 (19935255)		4											
CTA head and neck with IV contrast	Usually appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕⊕ 3-10 mSv [ped]	7	7	0	0	0	1	3	2	6	5	1
		References		Study Quality											
		31 (22633727)		4											
		30 (11778813)		4											
		10 (18790590)		4											
		11 (19935255)		4											
MRA head and neck without IV contrast	Usually not appropriate	Expert Consensus	○ ○ mSv	○ ○ mSv [ped]	3	3	6	1	6	2	3	0	0	0	0
MRA head and neck without and with IV contrast	Usually not appropriate	Expert Consensus	○ ○ mSv	○ ○ mSv [ped]	3	3	4	3	4	1	5	1	0	0	0

MRA head and neck with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	3	3	5	1	7	1	4	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	2	4	2	2	0	0	0	0
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	9	3	6	0	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	11	1	6	0	0	0	0	0	0
CT neck with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	16	2	0	0	0	0	0	0	0
CT neck without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	12	2	4	0	1	0	0	0	0
CT neck without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	11	1	4	1	1	0	1	0	0
MRI head and orbits without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	12	1	3	0	1	0	1	1	0
MRI head and orbits without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	12	1	3	0	1	0	0	0	2
MRI head without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	14	3	1	0	0	0	0	0	0
MRI head without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	10	2	3	1	1	0	0	1	1
MRI neck without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	13	1	3	0	0	1	1	0	0
MRI neck without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	16	2	0	0	0	0	0	0	0
MRI cervical spine without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	13	1	2	1	1	0	1	0	0

MRI cervical spine without and with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	13	1	3	0	1	0	1	0	0
MRI thoracic spine without IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	14	0	1	1	1	1	1	0	0
MRI thoracic spine without and with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	14	0	2	1	0	0	1	1	0
MRI cervical spine with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	13	1	2	1	1	0	1	0	0
MRI thoracic spine with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	13	1	2	1	0	0	2	0	0
MRI orbits without and with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	14	1	1	0	1	0	0	2	0
MRI orbits without IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	14	1	2	0	0	1	1	0	0
MRI cervical and thoracic spine without and with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	13	1	1	2	1	0	1	0	0
MRI cervical and thoracic spine without IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	13	1	1	1	1	1	1	0	0
MRI cervical and thoracic spine with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	13	1	1	1	2	0	1	0	0
MRI head with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	11	2	3	0	1	0	0	2	0
MRI neck with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	16	2	0	0	0	0	0	0	0
MRI head and orbits with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	12	1	3	0	1	0	1	1	0
MRI head without IV contrast and MRA head and neck without IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	11	1	1	3	1	1	0	0	0

MRI head with IV contrast and MRA head and neck with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	15	2	1	0	0	0	0	0	0
MRI head without and with IV contrast and MRA head and neck without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	2	1	2	2	0	0	0	0
MRI orbits with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	14	1	1	0	1	0	1	1	0
MRI head without and with IV contrast and MRA head and neck with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	12	3	2	0	1	0	0	0	0
MRI head without and with IV contrast and MRA head and neck without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	2	1	2	2	0	0	0	0

Variant 2: Adult. Acute onset Horner syndrome with localizing brain or cranial nerve neurological signs or symptoms. No history of trauma. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CT head without IV contrast and CTA head and neck with IV contrast	Usually appropriate	Limited	☼☼☼☼ 10-30 mSv		8	8	1	0	0	0	1	0	3	5	8
		References	Study Quality												
		34 (32060548)	4												
		33 (9549569)	4												
CTA head and neck with IV contrast	Usually appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	7	7	0	0	0	1	2	1	7	4	3
		References	Study Quality												
		34 (32060548)	4												
		33 (9549569)	4												
MRA head and neck without and with IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	3	0	1	3	9	2	0	0	0

MRI head without and with IV contrast	May be appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	5	5	6	0	2	0	8	1	1	0	0
MRI head without IV contrast and MRA head and neck without IV contrast	May be appropriate (Disagreement)	Expert Opinion	0 0 mSv	0 0 mSv [ped]	5	5	8	0	1	1	3	4	1	0	0
MRI head without and with IV contrast and MRA head and neck without and with IV contrast	May be appropriate (Disagreement)	Expert Opinion	0 0 mSv	0 0 mSv [ped]	5	5	5	1	0	0	3	7	1	1	0
MRI head without and with IV contrast and MRA head and neck with IV contrast	May be appropriate (Disagreement)	Expert Opinion	0 0 mSv	0 0 mSv [ped]	5	5	8	1	2	2	2	2	1	0	0
MRI head without and with IV contrast and MRA head and neck without IV contrast	May be appropriate (Disagreement)	Expert Opinion	0 0 mSv	0 0 mSv [ped]	5	5	6	1	0	0	8	2	1	0	0
MRA head and neck without IV contrast	May be appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	4	4	4	0	3	6	5	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	2	2	1	5	0	0	0	0
MRI head and orbits without and with IV contrast	Usually not appropriate	Limited	0 0 mSv	0 0 mSv [ped]	2	2	9	1	2	0	4	2	0	0	0
MRA head and neck with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	2	2	9	1	6	2	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	12	1	4	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	11	1	1	2	3	0	0	0	0
CT neck with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	14	3	1	0	0	0	0	0	0
CT neck without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	12	4	2	0	1	0	0	0	0

CT neck without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼☼ 3-10 mSv [ped]	1	1	10	6	1	0	0	1	0	1	0
MRI head and orbits without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	11	1	2	1	3	0	0	0	0
MRI head without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	10	5	2	1	0	0	0	0	0
MRI neck without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	13	3	0	0	2	1	0	0	0
MRI neck without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	15	3	0	0	0	0	0	0	0
MRI cervical spine without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	14	2	1	0	0	1	1	0	0
MRI cervical spine without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	14	2	1	0	0	1	0	1	0
MRI thoracic spine without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	15	1	1	0	1	0	1	0	0
MRI thoracic spine without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	15	1	1	0	1	0	0	1	0
MRI cervical spine with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	14	2	1	0	0	1	1	0	0
MRI thoracic spine with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	15	1	1	0	1	0	1	0	0
MRI orbits without and with IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	14	1	2	1	0	0	0	0	0
MRI orbits without IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	16	1	1	0	0	0	0	0	0
MRI cervical and thoracic spine without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	13	3	1	0	0	1	0	0	1

MRI cervical and thoracic spine without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	13	3	1	0	0	1	1	0	0
MRI cervical and thoracic spine with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	13	3	1	0	0	1	0	1	0
MRI head with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	2	5	1	0	0	0	0	0
MRI neck with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	16	2	0	0	0	0	0	0	0
MRI head and orbits with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	4	4	0	0	0	0	0	0
MRI head with IV contrast and MRA head and neck with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	0	6	0	1	0	0	0	0
MRI orbits with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	16	1	1	0	0	0	0	0	0

Variant 3: Adult. Acute or nonacute onset Horner syndrome with localizing spinal cord neurological signs or symptoms. No history of trauma. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI cervical and thoracic spine without and with IV contrast	Usually appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	9	9	1	0	0	0	0	0	4	2	12
MRI cervical spine without IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	3	0	5	1	8	1	0	0	0
MRI cervical spine without and with IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	1	0	1	2	7	6	1	0	0
MRI cervical and thoracic spine without IV contrast	May be appropriate (Disagreement)	Expert Opinion	O 0 mSv	O 0 mSv [ped]	5	5	7	0	2	0	3	4	2	0	0

MRI cervical spine with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	9	1	4	2	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	0	1	1	1	0	0
CT head without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	14	2	1	0	0	2	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	0	0	1	1	1	0	0
CTA head and neck with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	1	1	0	1	0	1	1	0
CT neck with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	17	1	0	0	0	0	0	0	0
CT neck without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	14	2	2	0	0	0	1	0	0
CT neck without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	2	0	1	1	0	0	1	0
MRA head and neck without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	14	1	1	1	0	0	2	0	0
MRA head and neck without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	17	1	0	0	0	0	0	0	0
MRI head and orbits without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	14	1	2	0	0	1	1	0	0
MRI head and orbits without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	13	2	2	0	0	0	1	1	0
MRI head without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	14	1	2	0	0	1	1	0	0

MRI head without and with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	17	0	1	0	0	0	0	0	0
MRI neck without IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	17	0	1	0	0	0	0	0	0
MRI neck without and with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	17	0	1	0	0	0	0	0	0
MRI thoracic spine without IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	15	0	3	0	0	0	0	0	0
MRI thoracic spine without and with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	11	2	3	1	1	0	0	0	0
MRI thoracic spine with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	15	1	2	0	0	0	0	0	0
MRI orbits without and with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	15	1	1	0	0	1	1	0	0
MRI orbits without IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	15	1	1	0	0	1	1	0	0
MRI cervical and thoracic spine with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	12	1	2	2	0	1	0	0	0
MRI head with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	13	1	3	0	0	0	2	0	0
MRA head and neck with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	17	1	0	0	0	0	0	0	0
MRI neck with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	17	0	1	0	0	0	0	0	0
MRI head and orbits with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	13	1	3	0	0	1	0	1	0
CT head without IV contrast and CTA head and neck with IV contrast	Usually not appropriate	Expert Consensus	10-30 mSv		1	1	13	3	1	0	0	0	1	1	0

MRI head without and with IV contrast	May be appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	5	5	2	0	0	2	7	6	1	0	0
MRI orbits without and with IV contrast	May be appropriate (Disagreement)	Expert Opinion	○ 0 mSv	○ 0 mSv [ped]	5	5	4	0	1	2	7	4	0	0	0
MRI head without and with IV contrast and MRA head and neck without and with IV contrast	May be appropriate (Disagreement)	Expert Opinion	○ 0 mSv	○ 0 mSv [ped]	5	5	3	1	1	0	0	0	3	5	5
		References		Study Quality											
		52 (22960616)		4											
		51 (18455904)		4											
MRI head without and with IV contrast and MRA head and neck without IV contrast	May be appropriate (Disagreement)	Expert Opinion	○ 0 mSv	○ 0 mSv [ped]	5	5	5	1	5	1	1	4	1	0	0
MRI head without IV contrast	May be appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	4	4	5	1	2	2	6	2	0	0	0
MRI orbits without IV contrast	May be appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	4	4	5	0	3	4	5	1	0	0	0
CT head without IV contrast and CTA head and neck with IV contrast	May be appropriate	Expert Consensus	⊕⊕⊕⊕ 10-30 mSv		4	4	4	0	3	5	5	1	0	0	0
MRI head without IV contrast and MRA head and neck without IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	3	3	7	1	3	1	4	2	0	0	0
		References		Study Quality											
		52 (22960616)		4											
		51 (18455904)		4											
MRI orbits with IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	3	3	8	1	1	3	4	1	0	0	0
MRI head without and with IV contrast and MRA head and neck with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	3	3	4	1	7	0	5	0	1	0	0
CTA head and neck with IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	2	2	8	2	3	1	4	0	0	0	0

CT head with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	17	0	1	0	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	11	1	1	3	2	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	16	1	1	0	0	0	0	0	0
CT neck with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	16	1	1	0	0	0	0	0	0
CT neck without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	13	0	5	0	0	0	1	0	0
CT neck without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	13	0	4	0	1	0	0	1	0
MRA head and neck without IV contrast	Usually not appropriate	Expert Consensus	○ ○ mSv	○ ○ mSv [ped]	1	1	15	1	2	0	0	0	0	0	0
MRA head and neck without and with IV contrast	Usually not appropriate	Expert Consensus	○ ○ mSv	○ ○ mSv [ped]	1	1	12	0	1	2	3	0	0	0	0
MRI neck without IV contrast	Usually not appropriate	Expert Consensus	○ ○ mSv	○ ○ mSv [ped]	1	1	14	1	2	0	0	1	1	0	0
MRI neck without and with IV contrast	Usually not appropriate	Expert Consensus	○ ○ mSv	○ ○ mSv [ped]	1	1	14	1	2	0	0	0	1	1	0
MRI cervical spine without IV contrast	Usually not appropriate	Expert Consensus	○ ○ mSv	○ ○ mSv [ped]	1	1	14	1	2	0	0	1	1	0	0
MRI cervical spine without and with IV contrast	Usually not appropriate	Expert Consensus	○ ○ mSv	○ ○ mSv [ped]	1	1	14	0	2	0	1	0	2	0	0
MRI thoracic spine without IV contrast	Usually not appropriate	Expert Consensus	○ ○ mSv	○ ○ mSv [ped]	1	1	15	1	1	0	0	1	1	0	0
MRI thoracic spine without and with IV contrast	Usually not appropriate	Expert Consensus	○ ○ mSv	○ ○ mSv [ped]	1	1	14	1	2	0	0	0	2	0	0

MRI cervical spine with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	13	1	2	0	1	0	2	0	0
MRI thoracic spine with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	14	2	0	0	1	1	1	0	0
MRI cervical and thoracic spine without and with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	13	1	2	0	1	0	1	1	0
MRI cervical and thoracic spine without IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	13	1	3	0	0	1	1	0	0
MRI cervical and thoracic spine with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	13	1	2	0	1	0	2	0	0
MRI head with IV contrast	Usually not appropriate	Limited	0 0 mSv	0 0 mSv [ped]	1	1	13	1	1	1	2	0	0	0	0

References	Study Quality
52 (22960616)	4
51 (18455904)	4

MRA head and neck with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	12	1	0	2	3	0	0	0	0
MRI neck with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	17	0	1	0	0	0	0	0	0
MRI head and orbits with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	13	0	2	1	2	0	0	0	0
MRI head with IV contrast and MRA head and neck with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	14	0	3	1	0	0	0	0	0

Variant 5: Adult. Nonacute onset Horner syndrome nonlocalizable, not otherwise specified. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CTA head and neck with IV	Usually	Limited	⊕⊕⊕ 1-10	⊕⊕⊕⊕ 3-	8	8	1	0	0	1	0	4	3	1	9

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
contrast	appropriate		mSv	10 mSv [ped]											
		References		Study Quality											
		52 (22960616)		4											
		51 (18455904)		4											
MRI orbits without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	3	3	8	1	4	3	1	0	2	0	0
CT head without IV contrast and CTA head and neck with IV contrast	Usually not appropriate	Expert Consensus	⊗⊗⊗⊗ 10-30 mSv		3	3	8	1	3	3	1	1	1	0	0
MRI head without and with IV contrast and MRA head and neck without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	3	3	8	1	2	2	4	1	0	0	0
CT neck with IV contrast	Usually not appropriate	Limited	⊗⊗⊗ 1-10 mSv	⊗⊗⊗ 0.3-3 mSv [ped]	2	2	9	3	2	1	3	0	0	0	0
		References		Study Quality											
		11 (19935255)		4											
		10 (18790590)		4											
		1 (10462732)		4											
		2 (-3197218)		4											
CT neck without IV contrast	Usually not appropriate	Limited	⊗⊗⊗ 1-10 mSv	⊗⊗⊗ 0.3-3 mSv [ped]	2	2	8	2	6	1	0	1	1	0	0
		References		Study Quality											
		11 (19935255)		4											
		10 (18790590)		4											
		1 (10462732)		4											
		2 (-3197218)		4											
MRA head and neck without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	9	0	2	3	3	1	0	0	0

MRI head without IV contrast and MRA head and neck without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	9	1	4	3	1	0	0	0	0
MRI head without and with IV contrast and MRA head and neck with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	9	1	3	3	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	17	1	0	0	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	13	0	2	2	0	0	2	0	0
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	12	1	3	1	0	0	1	1	0
CT neck without and with IV contrast	Usually not appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	12	2	2	1	1	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	10	0	3	2	2	1	0	0	0
MRI head and orbits without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	12	0	6	0	0	0	0	0	0
MRI head and orbits without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	10	0	4	3	1	0	0	0	0
MRI head without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	12	0	4	2	0	0	0	0	0
MRI head without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	10	0	3	4	1	0	0	0	0
MRI neck without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	11	0	7	0	0	0	0	0	0
MRI neck without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	10	0	1	4	3	0	0	0	0
MRI cervical spine without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	17	1	0	0	0	0	0	0	0

MRI cervical spine without and with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	17	1	0	0	0	0	0	0	0
MRI thoracic spine without IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	13	0	1	2	1	1	1	0	0
MRI thoracic spine without and with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	17	1	0	0	0	0	0	0	0
MRI cervical spine with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	17	1	0	0	0	0	0	0	0
MRI thoracic spine with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	13	0	1	3	0	1	1	0	0
MRI orbits without and with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	11	0	5	1	1	0	0	0	0
MRI cervical and thoracic spine without and with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	17	1	0	0	0	0	0	0	0
MRI cervical and thoracic spine without IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	17	1	0	0	0	0	0	0	0
MRI cervical and thoracic spine with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	17	1	0	0	0	0	0	0	0
MRI head with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	11	4	3	0	0	0	0	0	0
MRA head and neck with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	10	0	3	1	3	1	0	0	0
MRI neck with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	17	1	0	0	0	0	0	0	0
MRI head and orbits with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	12	1	4	1	0	0	0	0	0
MRI head with IV contrast and MRA head and neck with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	12	1	4	1	0	0	0	0	0

MRI orbits with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	10	1	2	2	2	0	1	0	1
MRI head without and with IV contrast and MRA head and neck without IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	10	0	2	5	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.