American College of Radiology
ACR Appropriateness Criteria®

Cranial Neuropathy

Variant 1: Anosmia and abnormalities of the sense of smell. (Olfactory nerve, CN I.)

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		O 0 mSv	O 0 mSv [ped]	8	n/a	0	0	0	0	0	0	0	0	0
MRI orbit face neck without and with IV contrast	Usually appropriate		O 0 mSv	O 0 mSv [ped]	8	n/a	0	0	0	0	0	0	0	0	0
MRI head without IV contrast	May be appropriate		O 0 mSv	O 0 mSv [ped]	6	n/a	0	0	0	0	0	0	0	0	0
CT maxillofacial with IV contrast	May be appropriate		☢☢ 0.1-1mSv		6	n/a	0	0	0	0	0	0	0	0	0
MRI orbit face neck without IV contrast	May be appropriate		O 0 mSv	O 0 mSv [ped]	6	n/a	0	0	0	0	0	0	0	0	0
CT head with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
CT head without and with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
CT head without IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
CT maxillofacial without IV contrast	May be appropriate		☢☢ 0.1-1mSv		5	n/a	0	0	0	0	0	0	0	0	0

CT maxillofacial without and with IV contrast	May be appropriate		☢☢☢ 1-10 mSv		4	n/a	0	0	0	0	0	0	0	0	0
FDG-PET/CT whole body	Usually not appropriate		☢☢☢☢ 10-30 mSv		2	n/a	0	0	0	0	0	0	0	0	0

Variant 2: Weakness or paralysis of the mastication muscles. Sensory abnormalities of the head and neck. Trigeminal neuralgia. (Trigeminal nerve, CN V.)

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		O 0 mSv	O 0 mSv [ped]	8	n/a	0	0	0	0	0	0	0	0	0
MRI orbit face neck without and with IV contrast	Usually appropriate		O 0 mSv	O 0 mSv [ped]	8	n/a	0	0	0	0	0	0	0	0	0
MRI head without IV contrast	May be appropriate		O 0 mSv	O 0 mSv [ped]	6	n/a	0	0	0	0	0	0	0	0	0
MRA head without IV contrast	May be appropriate		O 0 mSv	O 0 mSv [ped]	6	n/a	0	0	0	0	0	0	0	0	0
MRI orbit face neck without IV contrast	May be appropriate		O 0 mSv	O 0 mSv [ped]	6	n/a	0	0	0	0	0	0	0	0	0
CTA head with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
CT head with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
CT maxillofacial without IV contrast	May be appropriate		☢☢ 0.1-1mSv		5	n/a	0	0	0	0	0	0	0	0	0
CT maxillofacial with IV contrast	May be appropriate		☢☢ 0.1-1mSv		5	n/a	0	0	0	0	0	0	0	0	0

CT head without IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	4	n/a	0	0	0	0	0	0	0	0	0
CT head without and with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	4	n/a	0	0	0	0	0	0	0	0	0
CT neck without IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	4	n/a	0	0	0	0	0	0	0	0	0
CT neck with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	4	n/a	0	0	0	0	0	0	0	0	0
CT maxillofacial without and with IV contrast	May be appropriate		☢☢☢ 1-10 mSv		4	n/a	0	0	0	0	0	0	0	0	0
CT neck without and with IV contrast	Usually not appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	3	n/a	0	0	0	0	0	0	0	0	0
US neck	Usually not appropriate		O 0 mSv	O 0 mSv [ped]	2	n/a	0	0	0	0	0	0	0	0	0
FDG-PET/CT whole body	Usually not appropriate		☢☢☢☢ 10-30 mSv		2	n/a	0	0	0	0	0	0	0	0	0

Variant 3: Weakness or paralysis of facial expression. Hemifacial spasm. Bell palsy. (Facial nerve, CN VII.)

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI orbit face neck without and with IV contrast	Usually appropriate		O 0 mSv	O 0 mSv [ped]	9	n/a	0	0	0	0	0	0	0	0	0
MRI head without and with IV contrast	Usually appropriate		O 0 mSv	O 0 mSv [ped]	8	n/a	0	0	0	0	0	0	0	0	0
MRI orbit face neck without IV contrast	May be appropriate		O 0 mSv	O 0 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0

MRI head without IV contrast	May be appropriate		O 0 mSv	O 0 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
CT head without IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
CT head with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
CT head without and with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	4	n/a	0	0	0	0	0	0	0	0	0
CT neck with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	4	n/a	0	0	0	0	0	0	0	0	0
CT neck without IV contrast	Usually not appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	3	n/a	0	0	0	0	0	0	0	0	0
CT neck without and with IV contrast	Usually not appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	3	n/a	0	0	0	0	0	0	0	0	0
US neck	Usually not appropriate		O 0 mSv	O 0 mSv [ped]	2	n/a	0	0	0	0	0	0	0	0	0
FDG-PET/CT whole body	Usually not appropriate		☢☢☢☢ 10-30 mSv		2	n/a	0	0	0	0	0	0	0	0	0

Variant 4: Palate weakness. Oropharyngeal pain. (Glossopharyngeal nerve, CN IX.)

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI orbit face neck without and with IV contrast	Usually appropriate		O 0 mSv	O 0 mSv [ped]	8	n/a	0	0	0	0	0	0	0	0	0
MRI head without and with IV contrast	Usually appropriate		O 0 mSv	O 0 mSv [ped]	8	n/a	0	0	0	0	0	0	0	0	0

MRI orbit face neck without IV contrast	May be appropriate		O 0 mSv	O 0 mSv [ped]	6	n/a	0	0	0	0	0	0	0	0	0
MRI head without IV contrast	May be appropriate		O 0 mSv	O 0 mSv [ped]	6	n/a	0	0	0	0	0	0	0	0	0
CT neck with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	6	n/a	0	0	0	0	0	0	0	0	0
CT head without IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
CT head with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
CT neck without IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
CT head without and with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	4	n/a	0	0	0	0	0	0	0	0	0
CT neck without and with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	4	n/a	0	0	0	0	0	0	0	0	0
US neck	Usually not appropriate		O 0 mSv	O 0 mSv [ped]	2	n/a	0	0	0	0	0	0	0	0	0
FDG-PET/CT whole body	Usually not appropriate		☢☢☢☢ 10-30 mSv		2	n/a	0	0	0	0	0	0	0	0	0

Variant 5: Vocal cord paralysis. (Vagal nerve, CN X.)

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI orbit face neck without and with IV contrast	Usually appropriate		O 0 mSv	O 0 mSv [ped]	8	n/a	0	0	0	0	0	0	0	0	0

CT neck with IV contrast	Usually appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	8	n/a	0	0	0	0	0	0	0	0	0
MRI head without and with IV contrast	Usually appropriate		O 0 mSv	O 0 mSv [ped]	7	n/a	0	0	0	0	0	0	0	0	0
CT chest with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	6	n/a	0	0	0	0	0	0	0	0	0
MRI orbit face neck without IV contrast	May be appropriate		O 0 mSv	O 0 mSv [ped]	6	n/a	0	0	0	0	0	0	0	0	0
MRI head without IV contrast	May be appropriate		O 0 mSv	O 0 mSv [ped]	6	n/a	0	0	0	0	0	0	0	0	0
CT chest without IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
CT neck without IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
CT head with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
MRI chest without and with IV contrast	May be appropriate		O 0 mSv	O 0 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
Radiography chest	May be appropriate		☢ <0.1 mSv	☢ <0.03 mSv [ped]	4	n/a	0	0	0	0	0	0	0	0	0
FDG-PET/CT whole body	May be appropriate		☢☢☢☢ 10-30 mSv		4	n/a	0	0	0	0	0	0	0	0	0
US neck	May be appropriate		O 0 mSv	O 0 mSv [ped]	4	n/a	0	0	0	0	0	0	0	0	0
CT neck without and with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	4	n/a	0	0	0	0	0	0	0	0	0

CT head without IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	4	n/a	0	0	0	0	0	0	0	0	0
CT head without and with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	4	n/a	0	0	0	0	0	0	0	0	0
MRI chest without IV contrast	May be appropriate		O 0 mSv	O 0 mSv [ped]	4	n/a	0	0	0	0	0	0	0	0	0
CT chest without and with IV contrast	Usually not appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	3	n/a	0	0	0	0	0	0	0	0	0

Variant 6: Weakness or paralysis of the sternocleidomastoid and trapezius muscles. (Accessory nerve, CN XI.)

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		O 0 mSv	O 0 mSv [ped]	8	n/a	0	0	0	0	0	0	0	0	0
MRI orbit face neck without and with IV contrast	Usually appropriate		O 0 mSv	O 0 mSv [ped]	8	n/a	0	0	0	0	0	0	0	0	0
MRI orbit face neck without IV contrast	Usually appropriate		O 0 mSv	O 0 mSv [ped]	7	n/a	0	0	0	0	0	0	0	0	0
CT neck with IV contrast	Usually appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	7	n/a	0	0	0	0	0	0	0	0	0
MRI head without IV contrast	May be appropriate		O 0 mSv	O 0 mSv [ped]	6	n/a	0	0	0	0	0	0	0	0	0
CT head with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	6	n/a	0	0	0	0	0	0	0	0	0
CT neck without IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0

CT neck without and with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
CT head without IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
CT head without and with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
FDG-PET/CT whole body	Usually not appropriate		☢☢☢☢ 10-30 mSv		3	n/a	0	0	0	0	0	0	0	0	0
US neck	Usually not appropriate		O 0 mSv	O 0 mSv [ped]	2	n/a	0	0	0	0	0	0	0	0	0

Variant 7: Weakness or paralysis of the tongue. (Hypoglossal nerve, CN XII.)

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		O 0 mSv	O 0 mSv [ped]	8	n/a	0	0	0	0	0	0	0	0	0
MRI orbit face neck without and with IV contrast	Usually appropriate		O 0 mSv	O 0 mSv [ped]	8	n/a	0	0	0	0	0	0	0	0	0
CT neck with IV contrast	Usually appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	7	n/a	0	0	0	0	0	0	0	0	0
MRI head without IV contrast	May be appropriate		O 0 mSv	O 0 mSv [ped]	6	n/a	0	0	0	0	0	0	0	0	0
MRI orbit face neck without IV contrast	May be appropriate		O 0 mSv	O 0 mSv [ped]	6	n/a	0	0	0	0	0	0	0	0	0
CT head with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0

CT head without IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
CT head without and with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	4	n/a	0	0	0	0	0	0	0	0	0
CT neck without IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	4	n/a	0	0	0	0	0	0	0	0	0
CT neck without and with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	4	n/a	0	0	0	0	0	0	0	0	0
FDG-PET/CT whole body	Usually not appropriate		☢☢☢☢ 10-30 mSv		2	n/a	0	0	0	0	0	0	0	0	0
US neck	Usually not appropriate		O 0 mSv	O 0 mSv [ped]	2	n/a	0	0	0	0	0	0	0	0	0

Variant 8: Perineural spread of tumor. (Most commonly trigeminal nerve [CN V], facial nerve [CN VII].)

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI orbit face neck without and with IV contrast	Usually appropriate		O 0 mSv	O 0 mSv [ped]	9	n/a	0	0	0	0	0	0	0	0	0
MRI head without and with IV contrast	Usually appropriate		O 0 mSv	O 0 mSv [ped]	9	n/a	0	0	0	0	0	0	0	0	0
MRI orbit face neck without IV contrast	Usually appropriate		O 0 mSv	O 0 mSv [ped]	7	n/a	0	0	0	0	0	0	0	0	0
CT neck with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	6	n/a	0	0	0	0	0	0	0	0	0
CT head without IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0

CT head with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
CT neck without IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
MRI head without IV contrast	May be appropriate		O 0 mSv	O 0 mSv [ped]	5	n/a	0	0	0	0	0	0	0	0	0
FDG-PET/CT whole body	May be appropriate		☢☢☢☢ 10-30 mSv		4	n/a	0	0	0	0	0	0	0	0	0
CT head without and with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	4	n/a	0	0	0	0	0	0	0	0	0
CT neck without and with IV contrast	May be appropriate		☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	4	n/a	0	0	0	0	0	0	0	0	0
US neck	Usually not appropriate		O 0 mSv	O 0 mSv [ped]	2	n/a	0	0	0	0	0	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.**