2023 Computed Tomography (CT) Internal Auditory Canal, Mastoid, Orbits, Sella, Temporal Bone

Diagnostic Imaging

P_

Last Review Date: 08/10/2023
Previous Review Date: 08/12/2022
Guideline Intiated: 06/30/2019

Table of Contents

Computed Tomography (CT) Internal Auditory Canal, Mastoid, Orbits, Sella, Temporal Bone Guideline

NCD 220.1
See also, **NCD 220.1**: Computed Tomography at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

CT Internal Auditory Canal, Mastoid and Temporal Bone Guideline

A computed tomography (CT) of the internal auditory canal (IAC), mastoid and temporal bone is considered medically appropriate when the documentation demonstrates **ANY** of the following:

I. Bell's palsy (peripheral facial nerve palsy) evaluation when **magnetic resonance imaging (MRI) is contraindicated or unavailable** and **ANY** of the following: [20] [8]
   A. Atypical signs (eg, dysphagia, dizziness, headache)
   B. Facial twitching/spasms prior to onset
   C. Resolution is slow, beyond 3 weeks.
   D. **NO** improvement at 4 months

II. Cerebrospinal fluid (CSF) otorrhea to characterize a bony defect (for intermittent leaks and complex cases consider CT/MR/Nuclear Cisternography). (*__NOTE__: *CSF fluid should always be confirmed with laboratory testing [Beta-2 transferrin assay]*.) [9]

III. Cholesteatoma is suspected or known. [6] [26]

IV. Chronic otitis media (with or without cholesteatoma on exam) with failed treatment for acute otitis media [15]

V. Hearing loss (documented on audiogram) and **ANY** of the following: [22]
   A. Asymmetric sensorineural when **MRI is contraindicated or unavailable**.
   B. Cochlear implant evaluation
   C. Conductive or mixed
   D. Congenital

VI. Mastoiditis, acute is clinically suspected as a complication of acute otitis media and **ANY** of the following: [20]

A. Extracranial complications (eg, auricular protrusion, hearing loss, nystagmus, post-auricular swelling/erythema, retro-orbital pain, tinnitus, vertigo) are suspected.

B. Systemic illness is suspected or known.

C. Treatment failure (eg, high dose steroids, intravenous antibiotics, myringotomy with placement of tympanostomy tube)

VII. Peripheral vertigo is suspected based on clinical exam (eg, Dix-Hallpike maneuver, head-impulse with saccade, spontaneous unidirectional horizontal nystagmaus) **AND** symptoms are persistent **AFTER** medication trial **AND** 4 weeks of vestibular therapy (eg, Epley's maneuvers) [22]

VIII. Temporal bone fracture is suspected or known and **ANY** of the following: [13]

A. Fracture is known, for surgical or treatment planning.

B. Fracture is suspected based on mechanism of injury.

C. Initial imaging is non-diagnostic or indeterminate.

IX. Tinnitus and **ANY** of the following: [12]

A. Pulsatile tinnitus

B. Unilateral, non-pulsatile tinnitus and **MRI is contraindicated or unavailable**.

X. Vascular indications are suspected or known, with need for further evaluation, for **ANY** of the following

A. Dehiscence of the jugular bulb or carotid canal

B. Vascular anomalies of the temporal bone (eg, aberrant internal carotid artery, aberrant petrosal sinus, high jugular bulb, persistent stapedial artery)

CT Orbits Guideline

A computed tomography (CT) of the orbits is considered medically appropriate when the documentation demonstrates **ANY** of the following: (***NOTE:**. *CT is preferred for visualizing bony detail and calcifications. MRI is superior for the evaluation of the visual pathways, globe and soft tissues*.)

I. Abnormal external or direct eye exam and **ANY** of the following: [11]

A. Exophthalmos (proptosis) or enophthalmos [23] [17]

B. Ophthalmoplegia with concern for orbital pathology

C. Optic disk swelling is unilateral and **MRI is contraindicated or unavailable**.

D. Visual defect, **MRI is contraindicated or unavailable** and **ALL** of the following:

1. Optic disc(s) are abnormal (eg, edema, optic disc blurring or pallor) **OR** unilateral.
2. Defect is **NOT** explained by an underlying diagnosis, glaucoma or macular degeneration.

II. Complex strabismus (with ophthalmoplegia or ophthalmoparesis) to aid in diagnosis, treatment and/or surgical planning.

III. Congenital orbital anomalies are suspected or known.

IV. Optic Neuritis, **MRI is contraindicated or unavailable** and **ANY** of the following: [11]

A. Atypical presentation (eg, absence of pain, bilateral, lack of response to steroids, optic nerve hemorrhages, poor recovery or recurrence, severe visual impairment)

B. Optic neuritis confirmation and compressive lesions are suspected.

V. Orbital infection is clinically suspected. [7] [11]

VI. Orbital inflammatory disease (eg, eye pain and restricted eye movement with suspected orbital pseudotumor) is clinically suspected **AND MRI is contraindicated or unavailable**. [14] [11]

VII. Orbital or ocular mass/tumor is suspected or known.

VIII. Orbital trauma and **ANY** of the following: [21] [11]

A. Fracture is visualized on prior X-ray, for surgical or treatment planning.

B. Orbital trauma is suspected and X-ray is non-diagnostic or indeterminate.

C. Physical findings of direct eye injury

IX. Osteomyelitis is clinically suspected and **ANY** of the following: [19]

A. Bony deformity is directly visualized.

B. X-rays are abnormal, non-diagnostic or indeterminate.

Combination CT Brain and CT Orbit Guideline

Computerized tomography (CT) of the brain **combined** with CT of the orbit(s) is considered medically appropriate when the documentation demonstrates **MRI is contraindicated or unavailable** and **ANY** of the following:

I. Approved indications as listed under CT Orbits, performed in high-risk populations, who will need anesthesia for procedure, **AND** suspicion of intracranial pathology

II. Bilateral optic disk swelling (papilledema) with vision loss

III. Optic neuropathy or unilateral optic disk swelling (of unknown cause) is **suspected** with **ANY** of the following:

A. Central retinal vein occlusion or compression of the optic nerve

B. Ischemic optic neuropathy (arteritic or non-arteritic)

C. Optic Nerve infiltrative disorders

D. Optic Neuritis

CT Sella Guideline

Computed tomography (CT) of the sella is considered medically appropriate, when **MRI is contraindicated or unavailable** and the documentation demonstrates **ANY** of the following:

I. Parasellar or sellar masses are known, for further evaluation [10]

II. Pituitary gland disorder is suspected based on **ANY** of the following: [3]

A. Pituitary apoplexy with sudden onset of neurological (eg, dizziness, loss of balance, muscle weakness) and hormonal symptoms (eg, high blood pressure, hot flashes, weight gain)

B. Pituitary dysfunction is suspected, per laboratory findings.

C. Sella (pituitary) mass is suspected from prior imaging.

D. Visual field defect with suspected compression of the optic chiasm.

III. Peri-procedural, to guide invasive procedure planning and/or postoperative follow-up, for complications.

CT General Contraindications and Exclusions

Computed tomography (CT) may be contraindicated/excluded for **ANY** of the following: [5] [4] [24] [25]

- Allergy to contrast (if contrast is used)
- Pregnancy
- Renal impairment and dialysis unmanageable (if contrast is used)

LCD 37373
See also, **LCD 37373**: MRI and CT Scans of Head and Neck at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

LCD 35175
See also, **LCD 35175**: MRI and CT Scans of the Head and Neck at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

Brain/Head Cancer Imaging Surveillance

Bone Cancer Surveillance

NCCN Bone Cancer Version 3.2023

Bone cancer surveillance includes **ANY** of the following:

I. Chondrosarcoma surveillance for **ANY** of the following:

A. Low-grade and intracompartmental surveillance with **ALL** of the following:

1. Chest imaging every 6 to 12 months for 2 years, then annually as clinically indicated
2. Primary site X-rays and/or cross-sectional imaging magnetic resonace imaging (MRI) or computed tomography (CT) (both with contrast) every 6 to 12 months for 2 years, then annually as clinically indicated.

B. High grade (grade II or III, clear cell or extracompartmental) surveillance with **ALL** of the following:

1. Chest imaging every 3 to 6 months, may include CT at least every 6 months for 5 years, then annually for at least 10 years, as clinically indicated
2. Primary site X-rays and/or cross-sectional imaging MRI or CT (both with contrast) as clinically indicated.

II. Chordoma surveillance with **ALL** of the following:

A. Chest imaging every 6 months, with CT included annually for 5 years, then annually thereafter as clinically indicated

B. Imaging of primary site, timing, and modality (eg, MRI ± CT [both with contrast], X-ray) as clinically indicated up to 10 years

III. Ewing Sarcoma after primary treatment completed and stable/improved disease, surveillance with **ALL** of the following:

A. Chest imaging with X-ray or CT: every 2 to 3 months

B. Primary site imaging with MRI ± CT (both with contrast) and X-ray, increase intervals after 24 months and after 5 years, annually as clinically indicated (indefinitely). (*__NOTE__: *Consider PET/CT (head-to-toe) and/or bone scan.*)

IV. Giant cell tumor of the bone surveillance with **ALL** of the following:

A. Chest imaging every 6 to 12 months for 4 years, then annually thereafter as clinically indicated

B. Surgical site imaging as clinically indicated (eg, CT +/- MRI, both with contrast, X-ray)

V. Osteosarcoma surveillance with primary site and chest imaging (using same imaging that was done for initial work-up) according to **ANY** of the following: (*__NOTE__: *Consider PET/CT (head-to-toe) and/or bone scan*.)

A. Image every 3 months for years 1 and 2

B. Image every 4 months for year 3

C. Image every 6 months for years 4 and 5

D. Image annually for year 6 and thereafter, as clinically indicated

Central Nervous System (CNS) Cancer Surveillance

NCCN Central Nervous System Cancer Version 1.2023

Central nervous system (CNS) cancer surveillance includes **ANY** of the following:

I. Low-grade tumors, image with magnetic resonance imaging (MRI) every 3 months in year 1, every 6 to 12 months for another 5 years, and thereafter every 1 to 3 years as clinically indicated.

II. Malignant or recurrent tumors are imaged more frequently than low-grade tumors (see above).

Esophageal and Esophagogastric Junction Cancer Surveillance

NCCN Esophageal or Esophagogastric Junction Cancers Version 2.2023

Esophageal and esophagogastric junction cancer surveillance includes **ANY** of the following:[1]

I. Tumor classification is Tis (tumor in situ) or T1a, after eradication of all neoplasia/high-risk preneoplasia achieved **OR** after ablation with incompletely resected Barrett esophagus (BE):[2]

[1]Routine esophageal/esophagogastic junction cancers are not recommended for cancer-specific surveillance, for more than 5 years after the end of treatment.

[2]Imaging studies for surveillance are not recommended.

A. Upper gastrointestinal endoscopy (EGD) every 3 months for the first year

B. EGD every 6 months for the second year

C. EGD annually thereafter (indefinitely)

II. Tumor classification pT1b[a] (N0 on ultrasound) after all cancer eradicated, imaging surveillance includes **ALL** of the following:

A. Computed tomography (CT) chest/abdomen with contrast (unless contraindicated) may be considered every 6 months for the first 2 years and annually for up to 5 years

B. EGD every 3 months for the first year, every 4 to 6 months for the second year, then annually thereafter (indefinitely)

III. Tumor classification T1b or greater, any N[a] or T1a N+, imaging surveillance includes **ANY** of the following:

A. Esophagectomy performed, then surveillance includes **ALL** of the following:

1. Chest/abdomen CT (+ contrast, unless contraindicated) every 6 months for the first 2 years and annually for up to 5 years

2. EGD as clinically indicated **OR** if incompletely resected BE after ablation: EGD every 3 months for the first year, every 6 months for the second year, then annually indefinitely

B. Chemoradation is complete, then surveillance includes **ALL** of the following:

1. Chest/abdomen CT (+ contrast unless contraindicated) every 6 months for up to 2 years and then annually for up to 5 years

2. EGD every 6 months for up to 2 years and then annually for up to 5 years

IV. Tumor Classification (Pretreatment) T1b–T4, N0–N+,T4b surveillance imaging includes **ALL** of the following:

A. Chest/abdomen CT (+ contrast unless contraindicated) every 3 to 6 months for the 2 years and annually for up to 5 years

B. EGD every 3 to 6 months for the first 2 years, then annually for 3 more years

Head and Neck Cancers Surveillance

NCCN Head and Neck Cancers Version 2.2023

Head and neck cancers surveillance for locoregionally advanced disease after treatment, includes **ANY** of the following:

I. Short-term surveillance (less then 6 months after treatment), if there is high-risk of early recurrence, symptoms of early recurrence or before starting adjuvant postoperative therapy:

A. Computed tomography (CT) and/or magnetic resonance imaging (MRI) within 3 to 4 months postoperatively to establish a new baseline for future comparisons

B. Suspected incomplete response: CT or MRI scan earlier (eg, 4 to 8 weeks) based on the clinical situation. (*__NOTE__: *Consider an ultrasound [US] of the neck for targeted sampling.*)

C. FDG positron emissions tomography/computed tomography (FDG PET/CT) should be performed within 3–6 months of definitive radiation or systemic therapy/RT.

II. Long-term surveillance (6 months or more from end-of-treatment, up to 5 years after treatment) with ultrasound, CT, MRI, PET/CT and/or FDG PET/CT (as appropriate) to obtain surveillance for lesions that are recurrent, second primary or at distant sites.[3]

Neuroendocrine and Adrenal Cancer Surveillance

Neuroendocrine and adrenal cancer surveillance includes **ANY** of the following[4]: [2]

I. Carcinoid syndrome surveillance imaging includes **BOTH** of the following:

A. Abdominal/pelvic multiphasic computed tomography (CT) or magnetic resonance imaging (MRI) every 12 weeks to 12 months and chest CT (± contrast) as clinically indicated

B. Echocardiogram every 1 to 3 years or as clinically indicated

II. Gastrointestinal (GI) tract (jejunum/ileum/colon, duodenum, rectum), lung and/or thymus neuroendocrine tumor (NET) surveillance includes imaging post-resection with **ANY** of the following:

A. Bronchopulmonary and gastrointestinal NET surveillance with multiphasic CT or a MRI scan (+ contrast)

B. Jejunum/ilium/colon, duodenum, rectum and thymus, surveillance imaging with abdominal ± pelvic multiphasic CT or MRI according to **ONE** of the following levels of frequency:[5]

[3]Per the National comprehensive cancer network (NCCN) Guidelines for Head and Neck Cancers, there are no consensus guidelines for the surveillance imaging type, frequency or duration for locoregionally advanced disease. If an FDG PET/CT at 3 months post-treatment is negative, there are no data to support substantial benefit for further routine imaging when asymptomatic with negative exam. In the absence of multi-institutional prospective data, a tailored approach to surveillance with attention to tumor type, stage, prognostic factors, symptomatology, and physical exam changes or restrictions is recommended.

[4]No surveillance is indicated for appendiceal tumors 2 cm or smaller without aggressive features.

1. Within 12 weeks to 12 months postoperatively
2. After 12 months, image every 12 to 24 months for 10 years
3. After 10 years as clinically indicated

C. Lung/thymus tumors: CT (± contrast) for primary (as clinically indicated for primary GI tumors)

III. Grade 3, well-differentiated neuroendocrine surveillance includes chest CT (± contrast) as clinically indicated for **ANY** of the following:

A. Locally advanced/metastatic disease with favorable biology (low Ki-67 [eg, less than 55%], positive somastatin receptor [SSTR] based positron emissions tomography [PET] imaging) includes abdominal/pelvic MRI (+ contrast) or abdominal/pelvic multiphasic CT for surveillance with **ANY** of the following:

1. Resectable disease surveillance every 12 weeks to 24 weeks for 2 years, then every 6 to 12 months for up to 10 years and chest CT as clinically indicated
2. Unresectable disease surveillance every 12 weeks to 24 weeks (depending on tumor biology) **AND** chest CT (+ contrast); if clinically indicated.

B. Locally advanced/metastatic disease with unfavorable biology (high Ki-67 [eg 55% or higher], rapid growth rate, FDG avid tumors, negative SSTR-based PET imaging), includes surveillance imaging, every 8 weeks to 12 weeks (depending on tumor biology) with **ALL** of the following:

1. Abdominal/pelvic MRI (+ contrast) or abdominal/pelvic multiphasic CT and FDG PET/CT as clinically indicated
2. Chest CT (± contrast)

C. Locoregional disease (resectable) abdominal/pelvic MRI (+ contrast) or abdominal/pelvic multiphasic CT with frequency of **ONE** of the following:

1. Every 12 weeks to 24 weeks for 2 years, then
2. Every 6 months to 12 months for up to 10 years (depending on tumor biology, Ki-67) and chest CT as clinically indicated

D. Multiple endocrine neoplasia, type 1 (MEN1) screening surveillance for **ANY** of the following tumor types: (*__NOTE__: *For prolonged surveillance, imaging studies without radiation are preferred.*)

1. Bronchial/thymic NETs: cross-sectional chest CT or MRI (+ contrast) every 1 to 3 years

[5]High-grade tumors may be appropriate for more frequent monitoring.

2. PanNET: abdominal/pelvic CT or MRI (+ contrast) every 1 to 3 years and consider serial endoscopic ultrasound (EUS)
3. Parathyroid: if calcium rises, re-image with neck ultrasound and/or parathyroid sestamibi with single-photon emission computed tomography (SPECT) scan (SPECT-CT preferred) or 4D-CT
4. Pituitary: abdominal/pelvic CT or MRI (+ contrast) every 1 to 3 years (or serial EUS can also be considered); pituitary or sella MRI (+ contrast) of the pituitary every 3 to 5 years

E. Poorly differentiated large or small cell carcinoma and/or mixed neuroendocrine/non-neuroendocrine neoplasm or unknown primary, imaging surveillance includes **ALL** of the following:

1. Imaging includes **EITHER** chest CT (± contrast) then abdominal/pelvic MRI (+ contrast) **OR** chest/abdominal/pelvic multiphasic CT; every 12 weeks for the 1st year, and every 6 months thereafter
2. Locoregional unresectable or metastatic disease surveillance every 6 weeks to 16 weeks **OR** resectable disease surveillance every 12 weeks for 1 year, then every 6 months

F. Postoperative from potentially curative surgery surveillance for at least 10 years (longer if high-risk)

IV. Hereditary germ-line mutations (associated with pheochromocytomas and paragangliomas) surveillance imaging for **ANY** of the following:

A. Screening surveillance life-long starting age 6 years old (***NOTE:** *MRI is preferred to limit radiation exposure*.)

B. Post-resection imaging with abdominal/pelvic CT or MRI and chest CT (± contrast) as clinically indicated for **ONE** of the following intervals:

1. 12 weeks to 12 months after resection
2. Every 6 to 12 months for the 1st 3 years
3. Annually up to 10 years, then as clinically indicated

C. 1st degree relative screening

V. Pancreatic neuroendocrine tumor surveillance imaging, post-resection ,includes chest CT (± contrast) as clinically indicated and abdominal multiphasic CT or MRI with imaging frequency of **ONE** of the following:[5]

A. Within 3 to 12 months postoperatively

B. After 12 months, image every 6 to 12 months for 10 years

C. After 10 years as clinically indicated

VI. Rectal neuroendocrine tumors that are 1 cm to 2 cm size: endoscopy with rectal MRI **OR** endorectal ultrasound; at 6 months and 12 months, then as clinically indicated

TIP

NCCN recommends following the surveillance protocols from designated guidelines for the following hereditary endocrine neoplasia syndromes :

- Thyroid cancer guideline, use for: Multiple endocrine neoplasia, type 2 (MEN2) with genetic evaluation of inherited syndromes
- Kidney cancer, use for:
  - Hereditary paraganglioma/pheochromocytoma syndrome
  - Tuberous sclerosis complex (TSC1 and TSC2)
  - von Hippel Lindau syndrome (VHL)
- Genetic/Familial High-Risk Assessment: Breast, Ovarian, and Pancreatic, use for:
  - Neurofibromatosis type 1 (NF1)
  - Li-Fraumeni syndrome (TP53)
  - Lynch syndrome (MLH1, EPCAM/MSH2, MSH6, PMS2)
- Genetic/Familial High-Risk Assessment: Colorectal, use for:
  - Lynch syndrome (MLH1, EPCAM/MSH2, MSH6, PMS2)
  - Familial adenomatous polyposis (APC)

CT Internal Auditory Canal, Mastoid, Orbits, Sella, Temporal Bone Summary of Changes

CT Internal Auditory Canal, Mastoid, Orbits, Sella, Temporal Bone guideline from 2022 to 2023 had the following changes:

- Added the following to keep in line with current research:
  - "Approved indications" under "Combination CT Brain and CT Orbits"

- Indicatons under "Bell's palsy" for consistency between sections
- "Toxic appearance" under "Mastoiditis"

CT Internal Auditory Canal, Mastoid, Orbits, Sella, Temporal Bone Procedure Codes

Table 1. CT Orbits, Temporal Associated Procedure Codes

CODE	DESCRIPTION
70480	Computed tomography, orbit, sella, or posterior fossa or outer, middle, or inner ear; without contrast material
70481	Computed tomography, orbit, sella, or posterior fossa or outer, middle, or inner ear; with contrast material(s)
70482	Computed tomography, orbit, sella, or posterior fossa or outer, middle, or inner ear; without contrast material, followed by contrast material(s) and further sections

CT Internal Auditory Canal, Mastoid, Orbits, Sella, Temporal BoneDefinitions/Key Terms

Apoplexy is unconsciousness or incapacity resulting from a cerebral hemorrhage or stroke.
Audiogram/Audiometric testing is a graphic representation of the relation of vibration frequency and the minimum sound intensity for hearing.
Cholesteatoma is an epidermoid cyst usually in the brain arising from aberrant embryonic rests and appearing as a compact shiny flaky mass.
Cochlear implant is a small electronic device that electrically stimulates the cochlear nerve.
Computed tomography (CT) refers to a computerized X-ray imaging procedure in which a three-dimensional image of a body structure is revealed through a series of cross-sectional images or "slices."
Dehiscence is a partial or total separation of previously approximated wound edges, due to a failure of proper wound healing.
Dysconjugate gaze is the inability to move both eyes together in a single horizontal (most commonly) or vertical direction.
Exophthalmos (proptosis) is the abnormal protrusion of the eyeball.
Fibrous dysplasia is a chronic problem in which scar-like tissue grows in place of normal bone.
Granulomatosis is a chronic condition marked by the formation of numerous masses or nodules of chronically inflamed tissue with granulations that are usually associated with an infective process.
Impacted cerumen is the buildup of earwax in the ear that can lead to hearing loss, irritation, pain in the ear, dizziness, ringing in the ears and other problems.

Nystagmus is a visual condition in which the eyes make repetitive, uncontrolled movements. These movements often result in reduced vision and depth perception and can affect balance and coordination; and can occur from side to side, up and down, or in a circular pattern
Ophthalmoplegia is paralysis of the extraocular muscles that control the movements of the eye. Ophthalmoplegia usually involves the third (oculomotor), fourth (trochlear), or sixth (abducens) cranial nerves. Double vision is the characteristic symptom in all three cases.
Optic neuritis is inflammation of the optic nerve.
Orbital pseudotumor is the swelling of tissue behind the eye which does not spread to other tissues or places in the body.
Osseous is consisting of bone.
Osteomyelitis is an infectious, inflammatory disease of bone. It is often painful, bacterial in origin and may result in the death of bone tissue.
Otitis media is inflammation of the middle ear marked especially by pain, fever, dizziness, and abnormalities in hearing.
Otorrhea is drainage of liquid from the ear.
Otosclerosis is the growth of spongy bone in the inner ear that causes progressively increasing deafness.
Paget's disease is a disease of the bone that interferes with the body's normal recycling process, in which new bone tissue gradually replaces old bone tissue. Over time, bones can become fragile and deformed.
Papilledema is swelling and protrusion of the blind spot of the eye caused by edema.
Polyangiitis is the inflammation of multiple types of vessels, such as small arteries and veins.
Proptosis is the forward projection or displacement, especially of the eyeball.
Saccade is a rapid movement of the eye between 2 fixated points.
Sella is a depression in the sphenoid bone, containing the pituitary gland.
Sensorineural hearing loss is hearing loss that occurs following inner ear damage.
Strabismus is a disorder in which both eyes do not line up in the same direction, therefore, they do not look at the same object at the same time.
Surveillance in cancer is the ongoing, timely and systematic collection and analysis of information on new cancer cases, extent of disease, screening tests, treatment, survival and cancer deaths.
Thyroid ophthalmopathy is a condition in which the eye muscles, eyelids, tear glands and fatty tissues behind the eye become inflamed. This can cause the eyes and eyelids to become red, swollen and uncomfortable and the eyes can be pushed forward ('staring' or 'bulging' eyes).
Tinnitus is a sensation of noise (such as a ringing or roaring) that is typically caused by a bodily condition (such as a disturbance of the auditory nerve or wax in the ear) and usually is of the subjective form which can only be heard by the one affected.

Trigeminal neuralgia is an intense paroxysmal neuralgia (pain radiating along the course of one or more nerves usually without demonstrable changes in the nerve structure) involving one or more branches of the trigeminal nerve.
Tullio's phemonenon describes eye movements induced by sound.
Vestibular function testing is a series of tests that can evaluate hearing function, the goal of the tests is to determine if there is damage to the vestibular portion of the inner ear. The vestibular area of the ear controls balance.
Wegener's Granulomatosis is an uncommon disease of unknown cause that is characterized chiefly by inflammation of small blood vessels and granuloma formation especially in the upper and lower respiratory tracts and kidneys and typically has an onset during the ages of 40 to 65.

CT Internal Auditory Canal, Mastoid, Orbits, Sella, Temporal Bone References

[1] Ajani, J.A., D'Amico, T.A., . . . Yoon, H. (2023). Esophageal or Esophagogastric Junction Cancers Version 2.2023. *National Comprehensive Cancer Network*. Retrieved: May 2023. https://www.nccn.org/professionals/physician_gls/pdf/esophageal.pdf
[2] Bergsland, E., Godner, W.S., . . . Soulen, M.C. (2022). Neuroendocrine and Adrenal Tumors Version 2.2022. *National Comprehensive Cancer Network*. Retrieved: June 2023. https://www.nccn.org/professionals/physician_gls/pdf/neuroendocrine.pdf
[3] Burns, J., Policeni, B., . . . Corey, A. (2019). ACR Appropriateness Criteria Neuroendocrine Imaging. *Journal of the American College of Radiology, 16*(5S), S161-S173.
[4] Caraiani, C., Dong, Y., . . . Dietrich, C.F. (2018). Reasons for inadequate or incomplete imaging techniques. *Medical Ultrasonography, 20*(4), 498-507.
[5] Currie, G. (2019). Pharmacology, Part 5: CT and MRI Contrast Media. *Journal of Nuclear Medicine Technology, 47*(3), 189-202.
[6] Gulati, M., Gupta, S., . . . Dixit, R. (2019). HRCT imaging of acquired cholesteatoma: a pictorial review. *Insights into Imaging, 10*, 92.
[7] Haddad, R.I., Wafa'a, A.S, . . . Al Kilany, I.E. (2020). The Role Of Computed Tomography (CT) Scans In The Management Of Orbital Cellulitis. *Journal of the Royal Medical Services, 27*(1), 39-45.
[8] Hennessy, M., Ouyang, T. & Slonimsky, E. (2021). Imaging of facial nerve pathologies and anatomic abnormalities. *Operative Techniques in Otolangology-Head and Neck Surgery, 32*(4), 197-204.
[9] Hiremath, S.B., Gautam, A.A., . . . Benjamin, G. (2019). Cerebrospinal fluid rhinorrhea and otorrhea: A multimodality imaging approach. *Diagnostic and Interventional Imaging, 100*(1), 3-15.

[10] Jipa, A. & Jain, V. (2021). Imaging of the sellar and parasellar regions. *Clinical Imaging, 77*, 254-275.

[11] Kennedy, T.A., Corey, A.S., . . . Bykowski, J. (2018). ACR Appropriateness Criteria Orbits Vision and Visual Loss. *Journal of the American College of Radiology, 15*(5S), S116-S131.

[12] Kessler, M.M., Moussa, M., . . . Cornelius, R.S. (2017). ACR Appropriateness Criteria Tinnitus. *Journal of the American College of Radiology, 14*(11S), S584-S591.

[13] Kurihasra, Y.Y., Fujikawa, A., . . . Starkey, J. (2020). Temporal Bone Trauma: Typical CT and MRI Appearances and Important Points for Evaluation. *RadioGraphics, 40*(4), 1148-1162.

[14] Lee, M.J., Hamilton, B.E., . . . Rosenbaum, J.T (2020). Radiologic imaging shows variable accuracy in diagnosing orbital inflammatory disease and assessing its activity. *Scientific Reports, 10*(1), 21875.

[15] Mahdiani, S., Lasminingrum, L. & Anugrah, D. (2021). Management evaluation of patients with chronic suppurative otitis media: A retrospective study. *Annals of Medicine and Surgery, 67*, 102492.

[16] Nabors, L.B., Portnow, J., . . . Willmarth, N.E. (2023). Central Nervous System Cancers Version 1.2023. *National Comprehensive Cancer Network*. Retrieved: July 2023. https://www.nccn.org/professionals/physician_gls/pdf/cns.pdf

[17] Nerad, J.A. (2021). Diagnostic Approach to the Patient with Proptosis. J.A. Nerad (Ed.). *Techniques in Ophthalmic Plastic Surgery* (2). (pp. 545-610). Philadelphia: Elsevier.

[18] Pfister, D.G., Spencer, S., . . . Zhen, W. (2023). Head and Neck Cancers Version 2.2023. *National Comprehensive Cancer Network*. Retrieved: July 2023. https://www.nccn.org/professionals/physician_gls/pdf/head-and-neck.pdf

[19] Pierce, J.L., Perry, M.T., . . . Beaman, F.D. (2022). ACR Appropriateness Criteria Suspected Osteomyelitis, Septic Arthritis, or Soft Tissue Infection (Excluding Spine and Diabetic Foot): 2022 Update. *Journal of the American College of Radiology, 19*(11), S473-S487.

[20] Rath, T.J., Policeni, B., . . . Corey, A.S. (2022). ACR Appropriateness Criteria Cranial Neuropathy: 2022 Update. *Journal of the American College of Radiology, 19*(11), S266-303.

[21] Sambasivarao, K. & Ushalatha, B. (2020). Role of MDCT in the Evaluation of Orbital Trauma. *Journal of Dental and Medical Sciences, 19*(1), 62-67.

[22] Sharma, A., Kirsch, C.F.E., . . . Bykowski, J. (2018). ACR Appropriateness Criteria Hearing Loss and/or Vertigo. *Journal of the American College of Radiology, 15*(11S), S321-S331.

[23] Topilow, N.J., Tran, A.Q., . . . Alabiad, C.R. (2020). Etiologies of Proptosis: A review. *Internal Medicine Review, 6*(3), 10.18103.

[24] Wang, C., Asch, D., . . . Weinstein, S. (2022). ACR Manual on Contrast Media. *American College of Radiology*. Retrieved: June 2023. https://www.acr.org/-/media/ACR/files/clinical-resources/contrast_media.pdf

[25] Witte, D.H. (2021). Advanced Imaging in Orthopaedics. F.M. Azar & J.H. Beaty (Eds.). *Campbell's Operative Orthopaedics* (14), (pp. 141-176). Philadelphia, PA: Elsevier.

[26] Xun, M., Liu, X., . . . Liu, J.P. (2023). The diagnostic utility of diffusion-weighted magnetic resonance imaging and high-resolution computed tomography for cholesteatoma: A meta-analysis. *Laryngoscope Investigative Otolaryngology, 8*(3), 627-635.

Disclaimer & Legal Notice

Purpose

The purpose of the HealthHelp's clinical guidelines is to assist healthcare professionals in selecting the medical service that may be appropriate and supported by evidence to safely improve outcomes. Medical information is constantly evolving, and HealthHelp reserves the right to review and update these clinical guidelines periodically. HealthHelp reserves the right to include in these guidelines the clinical indications as appropriate for the organization's program objectives. Therefore the guidelines are not a list of all the clinical indications for a stated procedure, and associated Procedure Code Tables may not represent all codes available for that state procedure or that are managed by a specific client-organization.

Clinician Review

These clinical guidelines neither preempt clinical judgment of trained professionals nor advise anyone on how to practice medicine. Healthcare professionals using these clinical guidelines are responsible for all clinical decisions based on their assessment. All Clinical Reviewers are instructed to apply clinical indications based on individual patient assessment and documentation, within the scope of their clinical license.

Payment

The use of these clinical guidelines does not provide authorization, certification, explanation of benefits, or guarantee of payment; nor do the guidelines substitute for, or constitute, medical advice. Federal and State law, as well as member benefit contract language (including definitions and specific contract provisions/exclusions) take precedence over clinical guidelines and must be considered first when determining eligibility for coverage. All final determinations on coverage and payment are the responsibility of the health plan. Nothing contained within this document can be interpreted to mean otherwise.

Registered Trademarks (®) and Copyright (©)

All trademarks, product names, logos, and brand names are the property of their respective owners and are used for purposes of information and/or illustration only. Current Procedural Ter-