

Clinical Appropriateness Guidelines: Advanced Imaging

Appropriate Use Criteria: Imaging of the Head & Neck

Effective Date: March 12, 2018

Proprietary

Date of Origin: 03/30/2005

Last revised: 11/01/2016

Last reviewed: 08/15/2017



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Description and Application of the Guidelines



AIM's Clinical Appropriateness Guidelines (hereinafter "AIM's Clinical Appropriateness Guidelines" or the "Guidelines") are designed to assist providers in making the most appropriate treatment decision for a specific clinical condition for an individual. As used by AIM, the Guidelines establish objective and evidence-based, where possible, criteria for medical necessity determinations. In the process, multiple functions are accomplished:

- To establish criteria for when services are medically necessary
- To assist the practitioner as an educational tool
- To encourage standardization of medical practice patterns
- To curtail the performance of inappropriate and/or duplicate services
- To advocate for patient safety concerns
- To enhance the quality of healthcare
- To promote the most efficient and cost-effective use of services

AIM's guideline development process complies with applicable accreditation standards, including the requirement that the Guidelines be developed with involvement from appropriate providers with current clinical expertise relevant to the Guidelines under review and be based on the most up to date clinical principles and best practices. Relevant citations are included in the "References" section attached to each Guideline. AIM reviews all of its Guidelines at least annually.

AIM makes its Guidelines publicly available on its website twenty-four hours a day, seven days a week. Copies of AIM's Clinical Appropriateness Guidelines are also available upon oral or written request. Although the Guidelines are publicly-available, AIM considers the Guidelines to be important, proprietary information of AIM, which cannot be sold, assigned, leased, licensed, reproduced or distributed without the written consent of AIM.

AIM applies objective and evidence-based criteria and takes individual circumstances and the local delivery system into account when determining the medical appropriateness of health care services. The AIM Guidelines are just guidelines for the provision of specialty health services. These criteria are designed to guide both providers and reviewers to the most appropriate services based on a patient's unique circumstances. In all cases, clinical judgment consistent with the standards of good medical practice should be used when applying the Guidelines. Guideline determinations are made based on the information provided at the time of the request. It is expected that medical necessity decisions may change as new information is provided or based on unique aspects of the patient's condition. The treating clinician has final authority and responsibility for treatment decisions regarding the care of the patient and for justifying and demonstrating the existence of medical necessity for the requested service. The Guidelines are not a substitute for the experience and judgment of a physician or other health care professionals. Any clinician seeking to apply or consult the Guidelines is expected to use independent medical judgment in the context of individual clinical circumstances to determine any patient's care or treatment.

The Guidelines do not address coverage, benefit or other plan specific issues. If requested by a health plan, AIM will review requests based on health plan medical policy/guidelines in lieu of AIM's Guidelines.

The Guidelines may also be used by the health plan or by AIM for purposes of provider education, or to review the medical necessity of services by any provider who has been notified of the need for medical necessity review, due to billing practices or claims that are not consistent with other providers in terms of frequency or some other manner.

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Administrative Guideline: Ordering of Multiple Studies



Requests for multiple imaging studies to evaluate a suspected or identified condition and requests for repeated imaging of the same anatomic area are subject to additional review to avoid unnecessary or inappropriate imaging.

Simultaneous Ordering of Multiple Studies

In many situations, ordering multiple imaging studies at the same time is not clinically appropriate because:

- Current literature and/or standards of medical practice support that one of the requested imaging studies is more appropriate in the clinical situation presented; or
- One of the imaging studies requested is more likely to improve patient outcomes based on current literature and/or standards of medical practice; or
- Appropriateness of additional imaging is dependent on the results of the lead study.

When multiple imaging studies are ordered, the request will often require a peer-to-peer conversation to understand the individual circumstances that support the medical necessity of performing all imaging studies simultaneously.

Examples of multiple imaging studies that may require a peer-to-peer conversation include:

- CT brain and CT sinus for headache
- MRI brain and MRA brain for headache
- MRI cervical spine and MRI shoulder for pain indications
- MRI lumbar spine and MRI hip for pain indications
- MRI or CT of multiple spine levels for pain or radicular indications
- MRI foot and MRI ankle for pain indications
- Bilateral exams, particularly comparison studies

There are certain clinical scenarios where simultaneous ordering of multiple imaging studies is consistent with current literature and/or standards of medical practice. These include:

- Oncologic imaging – Considerations include the type of malignancy and the point along the care continuum at which imaging is requested
- Conditions which span multiple anatomic regions – Examples include certain gastrointestinal indications or congenital spinal anomalies

Repeated Imaging

In general, repeated imaging of the same anatomic area should be limited to evaluation following an intervention, or when there is a change in clinical status such that imaging is required to determine next steps in management. At times, repeated imaging done with different techniques or contrast regimens may be necessary to clarify a finding seen on the original study.

Repeated imaging of the same anatomic area (with same or similar technology) may be subject to additional review in the following scenarios:

- Repeated imaging at the same facility due to motion artifact or other technical issues
- Repeated imaging requested at a different facility due to provider preference or quality concerns
- Repeated imaging of the same anatomic area (MRI or CT) based on persistent symptoms with no clinical change, treatment, or intervention since the previous study
- Repeated imaging of the same anatomical area by different providers for the same member over a short period of time

Administrative Guideline: Pre-Test Requirements



Critical to any finding of clinical appropriateness under the guidelines for specific imaging exams is a determination that the following are true with respect to the imaging request:

- A clinical evaluation has been performed prior to the imaging request (which should include a complete history and physical exam and review of results from relevant laboratory studies, prior imaging and supplementary testing) to identify suspected or established diseases or conditions.
- **For suspected diseases or conditions:**
 - Based on the clinical evaluation, there is a reasonable likelihood of disease prior to imaging; and
 - Current literature and standards of medical practice support that the requested imaging study is the most appropriate method of narrowing the differential diagnosis generated through the clinical evaluation and can be reasonably expected to lead to a change in management of the patient; and
 - The imaging requested is reasonably expected to improve patient outcomes based on current literature and standards of medical practice.
- **For established diseases or conditions:**
 - Advanced imaging is needed to determine whether the extent or nature of the disease or condition has changed; and
 - Current literature and standards of medical practice support that the requested imaging study is the most appropriate method of determining this and can be reasonably expected to lead to a change in management of the patient; and
 - The imaging requested is reasonably expected to improve patient outcomes based on current literature and standards of medical practice.
- If these elements are not established with respect to a given request, the determination of appropriateness will most likely require a peer-to-peer conversation to understand the individual and unique facts that would supersede the pre-test requirements set forth above. During the peer-to-peer conversation, factors such as patient acuity and setting of service may also be taken into account.

Computed Tomography (CT) Head



CPT Codes

- 70450..... CT of head, without contrast
- 70460..... CT of head, with contrast
- 70470..... CT of head, without contrast, followed by re-imaging with contrast

Standard Anatomic Coverage

- From the skull base to vertex, covering the entire calvarium and intracranial contents
- Scan coverage may vary, depending on the specific clinical indication

Technology Considerations

- MRI of the head is preferable to CT in most clinical scenarios, due to its superior contrast resolution and lack of beam-hardening artifact adjacent to the petrous bone (which may limit visualization in portions of the posterior fossa and brainstem on CT).
- Exceptions to the use of brain MRI as the neuroimaging procedure of choice and situations where CT is preferred:
 - initial evaluation of recent craniocerebral trauma
 - evaluation of acute intracranial hemorrhage (parenchymal, subarachnoid, subdural, epidural)
 - evaluation of calcified intracranial lesions
 - osseous assessment of the calvarium, skull base and maxillofacial bones, including detection of calvarial and facial bone fractures

Common Diagnostic Indications

This section begins with general indications for CT Head, followed by Neurologic Signs and Symptoms and Vascular indications.

General Head/Brain

Abnormal imaging findings

Follow up of abnormal or indeterminate findings on a prior imaging study when required to direct treatment

Acoustic neuroma

Management of known acoustic neuroma when **at least one** of the following applies:

- Symptoms suggestive of recurrence or progression
- Following conservative treatment or incomplete resection at 6, 18, 30, and 42 months
- Post resection, baseline imaging and follow up at 12 months after surgery

Congenital or developmental anomaly

Diagnosis or management (including perioperative evaluation) of a suspected or known congenital anomaly or developmental condition

Examples include Chiari malformation, craniosynostosis, macrocephaly, and microcephaly.

Dementia**

- Initial evaluation to exclude a secondary cause of symptoms
- Evaluation of rapidly progressive symptoms

*** requires contraindication to MRI*

Common Diagnostic Indications

Hearing loss, sensorineural**

Diagnosis—detection of acoustic neuroma or other retrocochlear lesion in persons diagnosed with sensorineural hearing loss characterized by either of the following features:

- Gradual onset of unilateral or asymmetric hearing loss demonstrated by audiometric testing (15 dB or greater at 2 consecutive frequencies between 0.5 and 3 kHz)
- Hearing loss associated with at least one neurologic sign or symptom known to increase the pretest probability of a retrocochlear lesion

** requires contraindication to MRI

Horner's syndrome**

** requires contraindication to MRI

Hydrocephalus/ventricular assessment

Diagnosis of suspected increased intracranial pressure or hydrocephalus

Management of ventricular shunt

Infectious disease

Diagnosis or management (including perioperative evaluation) of infection involving the brain or related structures

Inflammatory disease

Diagnosis or management of inflammatory disease with CNS involvement

Lumbar puncture risk assessment

- Evaluation prior to lumbar puncture when at least one of the following is present:
 - Papilledema
 - Abnormal neurological exam
 - Absent venous pulsations on fundoscopic exam
 - Altered mental status
 - Evidence for meningeal irritation
-

Movement disorders

Initial evaluation of the following movement disorders, to exclude an underlying structural lesion

- Hemifacial spasm
- Huntington's disease
- Multiple system atrophy (MSA)
- Parkinson's disease with atypical features
- Progressive supranuclear palsy
- Secondary dystonia
- Other focal or lateralizing movement disorder, such as hemiballismus, athetosis or chorea

Note: *Imaging is generally not indicated for evaluation of typical Parkinson's disease, essential tremor or primary dystonia.*

Multiple sclerosis and other white-matter diseases**

Diagnosis of suspected demyelinating disease

Management or surveillance of established disease

** requires contraindication to MRI

Common Diagnostic Indications

Neurocutaneous disorders

Diagnosis or management (including perioperative evaluation) of CNS lesions associated with a known neurocutaneous disorder

Examples include neurofibromatosis, Sturge-Weber syndrome, tuberous sclerosis, von Hippel-Lindau disease

Papilledema

Pituitary adenoma

Diagnosis of suspected pituitary adenoma when supported by symptoms and laboratory findings

Management (including perioperative evaluation) of known adenoma

Seizure disorder

- Initial evaluation, to rule out a structural brain lesion as a cause of seizure
 - Evaluation of seizures increasing in frequency or severity
 - Prior to discontinuation of anticonvulsant therapy in patients who have not been previously imaged
-

Trauma

Initial evaluation when a mechanism of injury has been identified and **at least one** of the following features is present:

- Age 65 or greater
 - Retrograde amnesia
 - At least two (2) episodes of emesis
 - Evidence of open, depressed or basilar skull fracture
 - Focal neurologic findings
 - Glasgow coma score less than 15 or altered mental status
 - High risk mechanism of injury
 - Seizure
-

Tumor (benign or malignant)

Diagnosis of suspected tumor when supported by the clinical presentation

Management (including perioperative evaluation) of established tumor when imaging is required to direct treatment

Surveillance of established tumor

Common Diagnostic Indications

Neurologic Signs & Symptoms

This section contains indications for Bell's palsy, headache, mental status change, syncope, vertigo/dizziness, and visual disturbance.

Advanced imaging based on nonspecific signs or symptoms is subject to a high level of clinical review.

Appropriateness of imaging depends upon the context in which it is requested. At a minimum, this includes a differential diagnosis and temporal component, along with documented findings on physical exam.

Additional considerations which may be relevant include comorbidities, risk factors, and likelihood of disease based on age and gender.

In general, the utility of structural brain imaging is limited to the following categories, each with a unique set of clinical presentations:

- Identification of a space occupying lesion or other focal abnormality (tumor, CVA)
- Detection of parenchymal abnormalities (atrophy, demyelinating disease, infection, ischemic change)
- Identification of ventricular abnormalities (hydrocephalus)

There are a number of common symptoms or conditions for which the likelihood of an underlying central nervous system process is extremely low. The following indications include specific considerations and requirements which help to determine appropriateness of advanced imaging for these symptoms.

Bell's palsy (peripheral facial weakness)

Evaluation of hemifacial weakness when either of the following is present:

- Additional neurologic findings suggestive of intracranial pathology
- Symptoms persisting beyond six (6) weeks

Headache

New headache

- When associated with one or more red flag features (see **Table** below); **OR**,
- Headache has not improved or has worsened during a course of physician-directed treatment, and the patient has been reevaluated by a clinician following completion of therapy.

Recurrent headache

- When associated with at least one red flag feature (see **Table**) and advanced imaging (CT or MRI) has not been performed to evaluate the headache; **OR**,
- When CT or MRI has been performed to evaluate the headache, and a red flag feature has developed since the prior imaging study; **OR**,
- Headaches are increasing in frequency and/or severity despite at least four (4) weeks of physician-directed treatment and reevaluation by a clinician following completion of therapy.

Common Diagnostic Indications

Table: Red flag features for headache

Headache Characteristics	Associated clinical features and conditions
<ul style="list-style-type: none"> Brought on by exertion or valsalva Cluster headache not previously evaluated with MRI Postural/positional Thunderclap or sentinel headache—sudden onset and severe (worst headache of life) reaching maximal intensity within minutes 	<ul style="list-style-type: none"> Abnormal neurological exam during the headache episode or in between episodes (<i>Note: photophobia and nausea are not considered abnormalities on neurologic exam</i>) Neck or facial pain (concern for dissection)—see Dissection indication in CTA/MRA Head guideline Neck stiffness and fever—see Infectious disease and Inflammatory disease indications Risk factors for venous thrombosis—see Venous thrombosis indication
Patient Populations	High-risk vascular patient
<ul style="list-style-type: none"> Age over 50 years with new onset of headache Known malignancy Increased genetic risk for intracranial neoplasms (including basal cell nevus syndrome, Gorlin syndrome, Li-Fraumeni syndrome, neurofibromatosis type 1 and type 2, Turcot syndrome, and von Hippel-Lindau syndrome) Immunodeficiency (including HIV) 	<ul style="list-style-type: none"> Personal or family history (at least one first-degree relative) of aneurysm, subarachnoid hemorrhage (SAH), or arteriovenous malformation (AVM) Heritable condition associated with intracranial aneurysm formation, including autosomal dominant polycystic kidney disease, Ehlers-Danlos syndrome, Marfan syndrome, neurofibromatosis type 1 and type 2, and other rare conditions (including hereditary hemorrhagic telangiectasia, multiple endocrine neoplasia, pseudoxanthoma elasticum)

Mental status changes, with documented objective evidence from neurologic exam

Syncope

Evaluation for a structural brain lesion when associated with at least one of following:

- Documented abnormality on neurological examination
- Presence of at least one persistent neurological symptom
- Witnessed or highly suspected seizure activity at the time of the episode

Vertigo and dizziness

Evaluation for a structural brain lesion when either of the following is present:

- Abnormal audiogram or auditory brainstem response
- Signs or symptoms suggestive of a CNS lesion

Note: *Vertigo or dizziness which is clearly related to positional change does not require advanced imaging.*

Visual disturbance

Evaluation for central nervous system pathology when suggested by the ophthalmologic exam

Common Diagnostic Indications

Vascular indications

This section contains indications for aneurysm, cerebrovascular accident/transient ischemic attack, congenital/developmental vascular anomalies, hemorrhage/hematoma, and venous thrombosis.

Aneurysm

- **Screening** in asymptomatic high-risk individuals
 - At least two (2) first degree relatives with intracranial aneurysm or subarachnoid hemorrhage
 - Presence of a heritable condition which predisposes to intracranial aneurysm (examples include autosomal dominant polycystic kidney disease and Ehlers-Danlos syndrome type IV)
- **Diagnosis** of suspected aneurysm based on neurologic signs or symptoms (for isolated headache, see **Headache** indication)
- **Management** (including perioperative evaluation) of known (treated or untreated) intracranial aneurysm when associated with new or worsening neurologic symptoms
- **Surveillance** of known aneurysm in the absence of new or worsening symptoms
 - Initial evaluation at 6–12 months following diagnosis, then every 1–2 years
 - Follow-up after treatment with clips, endovascular coil or stenting

Cerebrovascular accident (CVA or stroke) and transient ischemic attack (TIA)

Diagnosis of signs or symptoms suggestive of acute infarction

Note: *CT is preferred for evaluation of acute intracranial hemorrhage. MRI is preferred for evaluation of subacute and chronic hemorrhage.*

Management of CVA when imaging is required to direct treatment

Congenital or developmental vascular anomaly

Diagnosis or management of known or suspected vascular anomaly

Examples include arteriovenous malformation (AVM), cavernous malformation, dural arteriovenous fistula (DAVF).

Hemorrhage / hematoma

Diagnosis of suspected hemorrhage (intracranial or subarachnoid) or hematoma

Management (including perioperative evaluation) of known hemorrhage (intracranial or subarachnoid) or hematoma, when imaging is required to direct treatment

Common Diagnostic Indications

Venous thrombosis (including dural venous sinus thrombosis, venous sinus thrombosis, cerebral vein thrombosis)

Diagnosis (requires at least **one** clinical finding AND **one** risk factor, OR at least **two** clinical findings as specified below)

- Clinical findings
 - Abnormal neurological exam
 - Headache
- Risk factors
 - Bechet's disease
 - Coagulopathy (examples: protein S, protein C, antithrombin 3, antiphospholipid antibody)
 - Drugs (including all trans retinoic acid [ATRA])
 - Iron deficiency anemia
 - Known malignancy
 - Meningitis /intracranial infection
 - Oral contraceptive
 - Pregnancy
 - Prior episodes of venous sinus thrombosis
 - Trauma

Management (including perioperative evaluation) of established venous thrombosis

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CT Angiography (CTA) and MR Angiography (MRA) Head: Cerebrovascular



CPT Codes

- 70496..... Computed tomographic angiography, head, with contrast material(s), including noncontrast images, if performed, and image postprocessing
- 70544..... Magnetic resonance angiography, head, without contrast
- 70545..... Magnetic resonance angiography, head, with contrast
- 70546..... Magnetic resonance angiography, head, without contrast, followed by re-imaging with contrast

Standard Anatomic Coverage

- CTA or MRA may be performed to assess the major intracranial arteries of the anterior and posterior circulations (including the Circle of Willis) as well as the venous structures (major cerebral veins and dural venous sinuses).
- For specific clinical indications, exams may be tailored to the region of interest.
- MRA of the head includes imaging of the entire arteriovenous system of the brain. Separate requests for concurrent imaging of the arteries and the veins in the head are inappropriate.

Choice of Imaging Study

Advantages of CTA

- Higher sensitivity for detection of mural calcification
- Absence of in-plane flow phenomenon which can exaggerate the degree of stenosis
- Improved detection of surgical clips and stents
- Shorter scan time, resulting in less motion artifact and better quality images

Advantages of MRA

- Provides information about the age of blood
- No need for iodinated contrast material
- No exposure to ionizing radiation

Combination with MRI

- In the majority of clinical situations, appropriateness of a second imaging study is dependent on the results of the lead study. This is particularly true with regard to MRI and MRA of the same anatomic region, as there is considerable overlap in visualizing vascular structures. Therefore, it is prudent to begin with the optimal study for the indication requested.
- When ordered in combination, peer to peer conversation will be required to understand the individual and unique facts that would support the medical necessity of all imaging studies requested.

Common Diagnostic Indications

Abnormal imaging findings

Follow up of abnormal or indeterminate findings on a prior imaging study when required to direct treatment

Common Diagnostic Indications

Aneurysm

- **Screening** in asymptomatic high-risk individuals
 - At least two (2) first degree relatives with intracranial aneurysm or subarachnoid hemorrhage
 - Presence of a heritable condition which predisposes to intracranial aneurysm (examples include autosomal dominant polycystic kidney disease and Ehlers-Danlos syndrome type IV)
- **Diagnosis** of suspected aneurysm based on neurologic signs or symptoms (for isolated headache, see **Headache** indication)
- **Management** (including perioperative evaluation) of known (treated or untreated) intracranial aneurysm when associated with new or worsening neurologic symptoms
- **Surveillance** of known aneurysm in the absence of new or worsening symptoms
 - Initial evaluation at 6–12 months following diagnosis, then every 1–2 years
 - Follow-up after treatment with clips, endovascular coil or stenting

Cerebrovascular accident (CVA)

- Evaluation for stenosis or occlusion of the intracranial arteries following confirmation of recent non-hemorrhagic CVA on MRI or CT scan
- Evaluation for a vascular etiology following confirmation of a recent hemorrhagic CVA on MRI or CT scan

Congenital or developmental vascular anomaly

Diagnosis or management (including perioperative or periprocedural management) of a suspected or known cerebrovascular anomaly

Examples include arteriovenous malformation (AVM), cavernous malformation, dural arteriovenous fistula (DAVF).

Dissection

Diagnosis of suspected intracranial artery dissection when suggested by the clinical presentation

Management (including perioperative evaluation) of established dissection

Headache

Evaluation for a vascular etiology when all of the following requirements have been met:

- MRI or CT criteria for imaging of headache are met
- MRI/CT has not determined the etiology of the headache
- Headache is persistent and undifferentiated

Note: *Undifferentiated headache refers to those not meeting criteria for a primary headache disorder (tension-type, migraine or cluster).*

Hemorrhage / hematoma

Diagnosis of suspected hemorrhage (intracranial or subarachnoid) or hematoma

Management (including perioperative evaluation) of known hemorrhage (intracranial or subarachnoid) or hematoma, when imaging is required to direct treatment

Pulsatile tinnitus

- Evaluation for vascular etiology

Stenosis or occlusion of intracranial arteries

- Diagnosis or management of known or suspected steno-occlusive disease

Thromboembolic disease of major intracranial arterial systems

Common Diagnostic Indications

Trauma

- When vascular involvement is known or suspected

Trigeminal neuralgia

- Evaluation for vascular etiology

Tumor (benign or malignant)

- Evaluation of vascular supply to established tumor

Vascular abnormalities associated with sickle cell disease

Vasculitis

Diagnosis or management of vasculitis with known or suspected CNS involvement

Venous thrombosis (including dural venous sinus thrombosis, venous sinus thrombosis, cerebral vein thrombosis)

Diagnosis (requires at least one clinical finding AND one risk factor, OR at least two clinical findings as specified below)

- Clinical findings
 - Abnormal neurological exam
 - Headache
- Risk factors
 - Bechet's disease
 - Coagulopathy (examples: protein S, protein C, antithrombin 3, antiphospholipid antibody)
 - Drugs (including all trans retinoic acid [ATRA])
 - Iron deficiency anemia
 - Known malignancy
 - Meningitis /intracranial infection
 - Oral contraceptive
 - Pregnancy
 - Prior episodes of venous sinus thrombosis
 - Trauma

Management (including perioperative evaluation) of established venous thrombosis

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Magnetic Resonance Imaging (MRI) Head/Brain



CPT Codes

- 70551..... MRI Head, without contrast
- 70552..... MRI Head, with contrast
- 70553..... MRI Head, without contrast, followed by re-imaging with contrast

Standard Anatomic Coverage

- From skull base to vertex, covering the entire calvarium and intracranial contents, including the internal auditory canals
- Scan coverage may vary, depending on the specific clinical indication.

Technology Considerations

- MRI of the head is preferable to CT in most clinical scenarios, due to its superior contrast resolution and lack of beam-hardening artifact adjacent to the petrous bone (which may limit visualization in portions of the posterior fossa and brainstem on CT).
- Exceptions to the use of brain MRI as the neuroimaging procedure of choice and situations where CT is preferred:
 - initial evaluation of recent craniocerebral trauma
 - evaluation of acute intracranial hemorrhage (parenchymal, subarachnoid, subdural, epidural)
 - evaluation of calcified intracranial lesions
 - osseous assessment of the calvarium, skull base and maxillofacial bones, including detection of calvarial and facial bone fractures

Common Diagnostic Indications

This section begins with general indications for MRI Head/Brain, followed by Neurologic Signs and Symptoms and Vascular indications.

General Head/Brain

Abnormal imaging findings

Follow up of abnormal or indeterminate findings on a prior imaging study when required to direct treatment

Acoustic neuroma

Management of known acoustic neuroma when at least one of the following applies:

- Symptoms suggestive of recurrence or progression
- Following conservative treatment or incomplete resection at 6, 18, 30, and 42 months
- Post resection, baseline imaging and follow up at 12 months after surgery

Congenital or developmental anomaly

Diagnosis or management (including perioperative evaluation) of a suspected or known congenital anomaly or developmental condition

Examples include Chiari malformation, craniosynostosis, macrocephaly, and microcephaly.

Dementia

- Initial evaluation to exclude a secondary cause of symptoms
- Evaluation of rapidly progressive symptoms

Common Diagnostic Indications

Hearing loss, sensorineural

Diagnosis—detection of acoustic neuroma or other retrocochlear lesion in persons diagnosed with sensorineural hearing loss characterized by **any** of the following features:

- Idiopathic sudden onset sensorineural loss
- Gradual onset of unilateral or asymmetric hearing loss demonstrated by audiometric testing (15 dB or greater at 2 consecutive frequencies between 0.5 and 3 kHz)
- Hearing loss associated with at least one neurologic sign or symptom known to increase the pretest probability of a retrocochlear lesion

Horner's syndrome

Hydrocephalus/ventricular assessment

Diagnosis of suspected increased intracranial pressure or hydrocephalus

Management of ventricular shunt

Infectious disease

Diagnosis or management (including perioperative evaluation) of infection involving the brain or related structures

Inflammatory disease

Diagnosis or management of inflammatory disease with CNS involvement

Movement disorders

Initial evaluation of the following movement disorders, to exclude an underlying structural lesion

- Hemifacial spasm
- Huntington's disease
- Multiple system atrophy (MSA)
- Parkinson's disease with atypical features
- Progressive supranuclear palsy
- Secondary dystonia
- Other focal or lateralizing movement disorder, such as hemiballismus, athetosis or chorea

Note: *Imaging is generally not indicated for evaluation of typical Parkinson's disease, essential tremor or primary dystonia.*

Multiple sclerosis and other white-matter diseases

Diagnosis of suspected demyelinating disease

Management or surveillance of established disease

Neurocutaneous disorders

Diagnosis or management (including perioperative evaluation) of CNS lesions associated with a known neurocutaneous disorder

Examples include neurofibromatosis, Sturge-Weber syndrome, tuberous sclerosis, von Hippel-Lindau disease

Papilledema

Pituitary adenoma

Diagnosis of suspected pituitary adenoma when supported by symptoms and laboratory findings

Management (including perioperative evaluation) of known adenoma

Common Diagnostic Indications

Seizure disorder

- Initial evaluation, to rule out a structural brain lesion as a cause of seizure
- Evaluation of seizures increasing in frequency or severity
- Prior to discontinuation of anticonvulsant therapy in patients who have not been previously imaged

Trauma

Following initial evaluation with CT, when MRI is needed to direct management or inform prognosis

Trigeminal neuralgia and persistent idiopathic facial pain

Evaluation for a structural lesion or demyelinating disease as a cause of symptoms

Tumor (benign or malignant)

Diagnosis of suspected tumor when supported by the clinical presentation

Management (including perioperative evaluation) of established tumor when imaging is required to direct treatment

Surveillance of established tumor

Neurologic Signs & Symptoms

This section contains indications for Bell's palsy, headache, syncope, tinnitus, vertigo/dizziness, and visual disturbance.

Advanced imaging based on nonspecific signs or symptoms is subject to a high level of clinical review.

Appropriateness of imaging depends upon the context in which it is requested. At a minimum, this includes a differential diagnosis and temporal component, along with documented findings on physical exam.

Additional considerations which may be relevant include comorbidities, risk factors, and likelihood of disease based on age and gender.

In general, the utility of structural brain imaging is limited to the following categories, each with a unique set of clinical presentations:

- Identification of a space occupying lesion or other focal abnormality (tumor, CVA)
- Detection of parenchymal abnormalities (atrophy, demyelinating disease, infection, ischemic change)
- Identification of ventricular abnormalities (hydrocephalus)

There are a number of common symptoms or conditions for which the likelihood of an underlying central nervous system process is extremely low. The following indications include specific considerations and requirements which help to determine appropriateness of advanced imaging for these symptoms.

Bell's palsy (peripheral facial weakness)

Evaluation of hemifacial weakness when either of the following is present:

- Additional neurologic findings suggestive of intracranial pathology
- Symptoms persisting beyond six (6) weeks

Common Diagnostic Indications

Headache

New headache

- When associated with one or more red flag features (see **Table** below); **OR**,
- Headache has not improved or has worsened during a course of physician-directed treatment, and the patient has been reevaluated by a clinician following completion of therapy.

Recurrent headache

- When associated with at least one red flag feature (see **Table** below) and advanced imaging (CT or MRI) has not been performed to evaluate the headache; **OR**,
- When CT or MRI has been performed to evaluate the headache, and a red flag feature has developed since the prior imaging study; **OR**,
- Headaches are increasing in frequency and/or severity despite at least four (4) weeks of physician-directed treatment and reevaluation by a clinician following completion of therapy.

Table: Red flag features for headache

Headache Characteristics	Associated clinical features and conditions
<ul style="list-style-type: none">• Brought on by exertion or valsalva• Cluster headache not previously evaluated with MRI• Postural/positional• Thunderclap or sentinel headache—sudden onset and severe (worst headache of life) reaching maximal intensity within minutes	<ul style="list-style-type: none">• Abnormal neurological exam during the headache episode or in between episodes (<i>Note: photophobia and nausea are not considered abnormalities on neurologic exam</i>)• Neck or facial pain (concern for dissection)—see Dissection indication in CTA/MRA Head guideline• Neck stiffness and fever—see Infectious disease and Inflammatory disease indications• Risk factors for venous thrombosis—see Venous thrombosis indication
Patient Populations	High-risk vascular patient
<ul style="list-style-type: none">• Age over 50 years with new onset of headache• Known malignancy• Increased genetic risk for intracranial neoplasms (including basal cell nevus syndrome, Gorlin syndrome, Li-Fraumeni syndrome, neurofibromatosis type 1 and type 2, Turcot syndrome, and von Hippel-Lindau syndrome)• Immunodeficiency (including HIV)	<ul style="list-style-type: none">• Personal or family history (at least one first-degree relative) of aneurysm, subarachnoid hemorrhage (SAH), or arteriovenous malformation (AVM)• Heritable condition associated with intracranial aneurysm formation, including autosomal dominant polycystic kidney disease, Ehlers-Danlos syndrome, Marfan syndrome, neurofibromatosis type 1 and type 2, and other rare conditions (hereditary hemorrhagic telangiectasia, multiple endocrine neoplasia, pseudoxanthoma elasticum)

Mental status changes, with documented objective evidence from neurologic exam

Syncope

Evaluation for a structural brain lesion when associated with **at least one** of following:

- Documented abnormality on neurological examination
- Presence of at least one persistent neurological symptom
- Witnessed or highly suspected seizure activity at the time of the episode

Tinnitus

Evaluation for vascular pathology, when tinnitus is pulsatile in quality

Evaluation for retrocochlear pathology, when **at least one** of the following features is present:

- Abrupt or sudden onset
- Associated neurologic findings
- Unilateral or asymmetric symptoms
 - Abnormality on audiogram or auditory brainstem response is required if present longer than six (6) months

Common Diagnostic Indications

Vertigo and dizziness

Evaluation for a structural lesion when **either** of the following is present:

- Abnormal audiogram or auditory brainstem response
- Signs or symptoms suggestive of a CNS lesion

Note: Vertigo or dizziness which is clearly related to positional change does not require advanced imaging.

Visual disturbance

Evaluation for central nervous system pathology when suggested by the ophthalmologic exam

Vascular indications

This section contains indications for aneurysm, cerebrovascular accident, congenital/developmental vascular anomalies, hemorrhage/hematoma, vasculitis, and venous thrombosis.

Aneurysm

- **Screening** in asymptomatic high-risk individuals
 - At least two (2) first degree relatives with intracranial aneurysm or subarachnoid hemorrhage
 - Presence of a heritable condition which predisposes to intracranial aneurysm (examples include autosomal dominant polycystic kidney disease and Ehlers-Danlos syndrome type IV)
- **Diagnosis** of suspected aneurysm based on neurologic signs or symptoms (for isolated headache, see **Headache** indication)
- **Management** (including perioperative evaluation) of known (treated or untreated) intracranial aneurysm when associated with new or worsening neurologic symptoms
- **Surveillance** of known aneurysm in the absence of new or worsening symptoms
 - Initial evaluation at 6–12 months following diagnosis, then every 1–2 years
 - Follow-up after treatment with clips, endovascular coil or stenting

Cerebrovascular accident (CVA or stroke) and transient ischemic attack (TIA)

Diagnosis of signs or symptoms suggestive of acute infarction

Note: CT is preferred for evaluation of acute intracranial hemorrhage. MRI is preferred for evaluation of subacute and chronic hemorrhage.

Management of CVA when imaging is required to direct treatment

Congenital or developmental vascular anomaly

Diagnosis or management (including perioperative evaluation) of a suspected or known congenital vascular anomaly or developmental condition

Examples include arteriovenous malformation (AVM), cavernous malformation, dural arteriovenous fistula (DAVF).

Hemorrhage / hematoma

Diagnosis of suspected hemorrhage (intracranial or subarachnoid) or hematoma

Management (including perioperative evaluation) of known hemorrhage (intracranial or subarachnoid) or hematoma, when imaging is required to direct treatment

Vasculitis

Evaluation of vasculitis with known or suspected CNS involvement

Common Diagnostic Indications

Venous thrombosis (including dural venous sinus thrombosis, venous sinus thrombosis, cerebral vein thrombosis)

Diagnosis (requires at least one clinical finding AND one risk factor, OR at least two clinical findings as specified below)

- Clinical findings
 - Abnormal neurological exam
 - Headache
- Risk factors
 - Bechet's disease
 - Coagulopathy (examples: protein S, protein C, antithrombin 3, antiphospholipid antibody)
 - Drugs (including all trans retinoic acid [ATRA])
 - Iron deficiency anemia
 - Known malignancy
 - Meningitis /intracranial infection
 - Oral contraceptive
 - Pregnancy
 - Prior episodes of venous sinus thrombosis
 - Trauma

Management (including perioperative evaluation) of established venous thrombosis

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Functional Magnetic Resonance Imaging (fMRI) Brain



CPT Codes

- 70554..... Magnetic resonance imaging, brain, functional MRI; including test selection and administration of repetitive body part movement and/or visual stimulation, not requiring physician or psychologist administration
- 70555..... Magnetic resonance imaging, brain, functional MRI; including test selection and administration of repetitive body part movement and/or visual stimulation, requiring physician or psychologist administration of entire neurofunctional testing

Standard Anatomic Coverage

- From the skull base to vertex, covering the intra-cranial contents
- Scan coverage may vary, depending on the specific clinical indication

Technology Considerations

- Functional MRI of the brain may be used to localize eloquent areas in the brain, prior to resection of neoplasm or medically intractable epileptogenic foci.
- Studies have shown excellent agreement in language localization, when comparing functional brain MRI with the Wada test and direct electrical stimulation.
- Advantages of functional brain MRI over a Wada test include the non-invasive technique (not requiring catheter placement and contrast injection), lack of ionizing radiation, shorter time-requirement, lower cost and quicker post-procedural recovery. Additionally, the Wada test is considered limited in right hemisphere dominance.
- Advantages of functional brain MRI over intraoperative electrocortical stimulation include its non-invasive technique and more extensive anatomic brain mapping. Direct electrical stimulation is an invasive procedure, which usually evaluates only one hemisphere (limiting assessment for partial or bilateral language dominance) and usually identifies only eloquent brain regions on the surface of the brain.
- Functional MRI may successfully map primary brain activities related to motor, sensory and language functions. Examples of tasks which may be used include sentence completion (to map language) and bilateral hand squeeze task (for sensory motor mapping).

Common Diagnostic Indications

Brain tumors

- Preoperative neurosurgical planning, as a replacement for a Wada test or direct electrical stimulation mapping

Seizures refractory to medical treatment

- Preoperative neurosurgical planning, as a replacement for a Wada test or direct electrical stimulation mapping

Positron Emission Tomography (PET) Brain Imaging



CPT Codes

78608..... PET brain, metabolic evaluation

78609..... PET brain, perfusion evaluation

Commonly Used Radiopharmaceuticals

- 2-(fluorine-18) fluoro-2-deoxy-d-glucose (FDG) Scan coverage may vary, depending on the specific clinical indication

Common Diagnostic Indications

Brain tumor

- Diagnosis or staging
- Differentiation of post treatment scarring from residual or recurrent disease

Frontotemporal lobe dementia and Alzheimer's disease

A one-time FDG-PET scan for differentiating between frontotemporal dementia and Alzheimer's disease is medically necessary and appropriate, provided that all of the following conditions are met:

- A recent diagnosis of frontotemporal dementia or Alzheimer's disease has been made by a physician experienced in the evaluation of dementia.
- There is documentation of cognitive decline of at least six (6) months duration.
- A comprehensive clinical evaluation has been performed, including all of the following:
 - History and physical examination, including an assessment of activities of daily living from a well-acquainted informant other than the patient.
 - Cognitive scales or neuropsychological testing
 - Laboratory testing to evaluate for metabolic causes of cognitive impairment
 - Structural imaging of the brain (CT or MRI) to identify a structural cause for cognitive impairment
 - The evaluation has not clearly identified a specific neurodegenerative disease or other cause for the clinical symptoms.
 - Results of the PET scan will help clarify the diagnosis in order to guide future treatment.
 - A brain SPECT has not been obtained for the same indication.

Note: Documentation of this evaluation, including results of all testing, and a current list of medications are required.

Refractory seizures / epilepsy

- Pre-surgical evaluation to identify a focus of seizure activity in patients who have failed conventional medical therapy

Computed Tomography (CT) Orbit, Sella Turcica, Posterior Fossa, Temporal Bone, including Mastoids



CPT Codes

- 70480..... CT of orbit, sella or posterior fossa and outer, middle or inner ear, without contrast
- 70481..... CT of orbit, sella or posterior fossa and outer, middle or inner ear, with contrast
- 70482..... CT of orbit, sella or posterior fossa and outer, middle or inner ear, without contrast, followed by re-imaging with contrast

Standard Anatomic Coverage

- Anatomic coverage and protocol specifications will vary, depending on the clinical indication. Anatomic evaluation includes the internal auditory canals (IACs), posterior fossa, sella turcica, orbits and temporal bone, with the mastoid air cells.
- Targeted evaluation, such as CT of the temporal bones, involves collimated views through the region of interest, often in two imaging planes: axial images (petrous bones through mastoid tips) and coronal views (temporomandibular joints through temporal bones).

Technology Considerations

- CT is often the preferred study for suspected fracture or follow-up of a known fracture, foreign body detection, assessment of calcified lesions and temporal bone evaluation.
- With capability for high-resolution osseous imaging, CT can provide detailed anatomic depiction of the temporal bone anatomy, including the middle and inner ear structures.
- MRI (unless contraindicated) is usually preferred over CT for evaluation of the sella turcica, internal auditory canal regions and visual pathways, as well as for most soft tissue tumor evaluation.
- Bony changes from a sellar, para-sellar or orbital mass or infectious process are usually well demonstrated by CT.

Common Diagnostic Indications

This section begins with general indications, followed by orbital and otic indications.

General indications

Abnormal imaging findings

Follow up of abnormal or indeterminate findings on a prior imaging study when required to direct treatment

Congenital or developmental anomaly

Diagnosis or management (including perioperative evaluation) of a suspected or known congenital anomaly or developmental condition of the orbit, temporal bone, sella turcica or posterior fossa (see Standard Anatomic Coverage for detail)

Infectious disease

Diagnosis or management (including perioperative evaluation) of infection involving the orbit, temporal bone, sella turcica or posterior fossa

Inflammatory disease

Diagnosis or management of inflammatory disease known to involve the orbit, temporal bone, sella turcica or posterior fossa

Localized facial pain – when persistent and unexplained

Common Diagnostic Indications

Osseous lesions

Examples include fibrous dysplasia, Paget's disease and otosclerosis

Trauma to the orbit, temporal bone, or skull base

Tumor (benign or malignant)

Diagnosis or management (including perioperative evaluation) of benign or malignant tumor of the orbit, temporal bone, sella turcica or posterior fossa

Orbital indications

Diagnosis or management of any of the following:

- Dysconjugate gaze
- Exophthalmos (or proptosis)
- Extraocular muscle weakness
- Nystagmus
- Optic neuritis
- Orbital pseudotumor
- Papilledema
- Strabismus
- Thyroid ophthalmopathy
- Visual field defect

Foreign body in the orbit

- Following non-diagnostic X-ray

Visual disturbance

Evaluation for orbital or optic nerve pathology when suggested by the ophthalmologic exam

Otic indications

Cholesteatoma

Cochlear implant

Preoperative and post-operative evaluation

Conductive hearing loss

Sensorineural hearing loss**

Diagnosis—detection of acoustic neuroma or other retrocochlear pathology in persons diagnosed with sensorineural hearing loss characterized by either of the following features:

- Gradual onset of unilateral or asymmetric hearing loss demonstrated by audiometric testing (15 dB or greater at 2 consecutive frequencies between 0.5 and 3 kHz)
- Hearing loss associated with at least one neurologic sign or symptom known to increase the pretest probability of a retrocochlear lesion

****requires contraindication to MRI**

Common Diagnostic Indications

Tinnitus**

Evaluation for vascular pathology when tinnitus is pulsatile in quality

Evaluation for retrocochlear pathology when at least one of following features is present:

- Abrupt or sudden onset
- Associated neurologic findings
- Unilateral or asymmetric symptoms
 - Abnormality on audiogram or auditory brainstem response is required if present longer than six (6) months.

****requires contraindication to MRI**

Vertigo and dizziness

- Evaluation of signs or symptoms suggestive of a CNS lesion
- Symptoms associated with abnormal audiogram or auditory brainstem response

Note: Vertigo or dizziness which is clearly related to positional change does not require advanced imaging.

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Magnetic Resonance Imaging (MRI) Orbit, Face & Neck (Soft Tissues)



CPT Codes

70540..... MRI orbit, face and neck, without contrast

70542..... MRI orbit, face and neck, with contrast

70543..... MRI orbit, face and neck, without contrast, followed by re-imaging with contrast

Standard Anatomic Coverage

- Scan coverage is dependent on the specific anatomic area of clinical interest, and may include the following:
 - Facial structures
 - Larynx and subglottic regions
 - Nasopharynx, oropharynx and hypopharynx
 - Neck soft tissues, surrounding the airway and glands
 - Optic nerve
 - Orbit
 - Salivary glands
 - Sinuses
 - Thyroid and parathyroid gland

Technology Considerations

- MRI is usually preferred over CT for evaluation of the sella turcica and visual pathways.
- CT is generally the modality of choice for traumatic injury, calcified lesions, localized infection (for example, orbital extension of an adjacent complicated sinusitis), and foreign body evaluation following initial radiographic evaluation for a radiopaque foreign body.
- CT is preferred for visualization of soft tissue structures in the neck.
- MRI of the orbit, face and neck is not indicated for imaging the internal auditory canals (see MRI brain, CPT codes 70551–70553).

Common Diagnostic Indications

This section begins with general indications, followed by nasal, neck, and orbital indications.

General indications

Abnormal imaging findings

Follow up of abnormal or indeterminate findings on a prior imaging study when required to direct treatment

Congenital anomalies

Diagnosis or management (including perioperative evaluation) of a suspected or known congenital anomaly of the orbit, maxillofacial area, or soft tissue structures of the neck (see Standard Anatomic Coverage for detail)

Horner's syndrome

Infectious disease (excluding sinusitis)

Diagnosis or management (including perioperative evaluation) of infection involving the orbit, maxillofacial area, or soft tissue of the neck

Note: For sinus infection, see CT Paranasal Sinus and Maxillofacial Area

Common Diagnostic Indications

Inflammatory disease

Diagnosis or management of inflammatory disease known to involve the orbit, maxillofacial area, or soft tissue structures of the neck

Example includes Wegener's granulomatosis (granulomatosis with polyangiitis)

Osteonecrosis of the jaw

Evaluation following non-diagnostic Panorex/radiographs

Thyroid nodule or thyromegaly (goiter)

- Following thyroid ultrasound or thyroid scintigraphy
- When associated with mass effect on the upper airway or esophagus
- For preoperative evaluation

Trauma to facial structures or soft tissues of the neck

Tumor (primary neoplasm or metastatic disease)

Diagnosis of suspected malignancy based on exam findings or testing abnormalities

Management (including perioperative evaluation) of known malignancy when imaging is required to direct treatment

Exclusion: Advanced imaging is not indicated for surveillance imaging of non-Hodgkin's lymphoma for a patient in remission and there has been at least two (2) years since the most recent course of chemotherapy.

Note: Surveillance applies to patients with no signs or symptoms of recurrent or persistent disease.

Nasal indications

Evaluation of any of the following:

- Anosmia
- Recurrent epistaxis
- Nasal airway obstruction or polyposis refractory to medical therapy

Neck indications

Hoarseness, dysphonia or vocal cord weakness/paralysis

Initial evaluation when **at least one** of the following applies:

- Following laryngoscopy, when findings suggest recurrent laryngeal nerve dysfunction or identify a suspicious lesion
- Symptoms persisting longer than one month which are unexplained by laryngoscopy
- Presence of **at least one** of the following high risk features:
 - Tobacco use
 - Alcohol abuse
 - Hemoptysis
 - History of radiation therapy
 - Known head and neck malignancy

Laryngeal edema

Lymphadenopathy

- When persistent and unexplained

Common Diagnostic Indications

Neck mass

- Evaluation of a palpable neck mass
- Follow up of a non-palpable neck mass identified on a prior imaging study
- Management (including perioperative evaluation) of known cystic neck mass or other benign tumor

Parathyroid adenoma

- Diagnosis following abnormal parathyroid ultrasound or scintigraphy
- Management following failed parathyroidectomy for localization of residual parathyroid tissue

Stridor / Tracheal stenosis / Upper airway obstruction

- For subacute and chronic stridor, soft tissue radiographs and ENT evaluation are required.

Orbital indications

Diagnosis or management of any of the following:

- Dysconjugate gaze
- Exophthalmos (or proptosis)
- Extraocular muscle weakness
- Nystagmus
- Optic neuritis
- Orbital pseudotumor
- Papilledema
- Strabismus
- Thyroid ophthalmopathy
- Visual field defect

Visual disturbance

Evaluation for orbital or optic nerve pathology when suggested by the ophthalmologic exam

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Computed Tomography (CT) Paranasal Sinus & Maxillofacial Area



CPT Codes

- 70486..... CT of maxillofacial area, without contrast
- 70487..... CT of maxillofacial area, with contrast
- 70488..... CT of maxillofacial area, without contrast, followed by re-imaging with contrast

Standard Anatomic Coverage

- Includes the sinuses, facial structures and maxillary regions. Individual scan coverage depends on the specific clinical request, but generally includes images through the entire frontal, ethmoid, maxillary and sphenoid sinuses. Coverage may be extended to include the mandible and temporomandibular joint (TMJ) in select cases and depending on the clinical indication. CT sections may be obtained in one or two (usually coronal and axial) planes.

Common Diagnostic Indications

Abnormal imaging findings

Follow up of abnormal or indeterminate findings on a prior imaging study when required to direct treatment

Congenital anomaly

Diagnosis or management (including perioperative evaluation) of a suspected or known congenital maxillofacial anomaly when imaging is required to direct treatment

Infectious disease

Diagnosis or management (including perioperative evaluation) of the following:

- Fungal or other complex sinus infections
- Osteomyelitis of the facial bones

Inflammatory disease

Diagnosis or management of inflammatory disease known to involve the maxillofacial region

Examples include Wegener's granulomatosis (granulomatosis with polyangiitis)

Osteonecrosis of the jaw

Evaluation following non-diagnostic Panorex/radiographs

Sinus and nasal indications

Diagnosis or management (including perioperative evaluation) of the following:

- Anosmia
- Foreign body in the maxillofacial region
- Mucocoele of paranasal sinuses
- Nasal airway obstruction refractory to medical therapy
- Polyposis
- Recurrent epistaxis

Common Diagnostic Indications

Sinusitis / rhinosinusitis

Acute, Uncomplicated Sinusitis / Rhinosinusitis

- Defined as symptoms that last for less than 4 weeks. Common symptoms include purulent rhinorrhea, postnasal drainage, anosmia, nasal congestion, facial pain, headache, fever, cough, purulent discharge and/or findings of an upper respiratory tract infection.
- No radiographic imaging is usually necessary for immunocompetent patients with acute rhinosinusitis, unless a complication or alternative diagnosis is suspected that requires imaging.
- CT may be performed if symptoms persist beyond 3 – 4 weeks of adequate treatment, which may include antibiotics, nasal steroids and/or decongestants. Under these circumstances, a complication of acute sinusitis/rhinosinusitis or an alternative diagnosis may warrant CT imaging of the paranasal sinuses.

Acute Recurrent Sinusitis / Rhinosinusitis

- Defined as 3 or more separate episodes of sinusitis during the past year
- Imaging used to corroborate the diagnosis and/or investigate for underlying causes of acute recurrent sinusitis.
- Clinicians should assess patients with recurrent acute sinusitis / rhinosinusitis for factors that modify management, such as allergic rhinitis, cystic fibrosis, immunocompromised states, ciliary dyskinesia and anatomic variations.

Chronic Sinusitis / Rhinosinusitis

- Defined as signs and symptoms of sinusitis that last for 12 weeks or longer
- Imaging used to corroborate the diagnosis and/or investigate for underlying causes of chronic sinusitis.
- Clinicians should assess patients with chronic sinusitis / rhinosinusitis for factors that modify management, such as allergic rhinitis, cystic fibrosis, immunocompromised states, ciliary dyskinesia and anatomic variations.

Peri-Orbital Swelling Associated with Sinus Infection

Barosinusitis / Headache Refractory to Antibiotics and Responding only to Decongestants / Oral Steroids

Temporomandibular disease (TMD)

Diagnosis of a temporomandibular joint (TMJ) source of TMD when at least one of the following applies:

- Panorex is inconclusive or not available
- Panorex findings require further characterization
- Panorex is normal but high clinical suspicion for TMJ pathology remains, and the results will change management (including perioperative evaluation)

Note: Temporomandibular disease is a collective term, which includes disorders of both the masticatory muscles and the TMJ. CT is generally not indicated when a muscular etiology for TMD is suspected. Most TMJ pathology can be evaluated with a Panorex radiograph.

Trauma to the facial bones

Tumor or mass lesion in the sinus or nasal region

Diagnosis or management (including perioperative evaluation) of benign or malignant tumors

References

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Magnetic Resonance Imaging (MRI) Temporomandibular Joint (TMJ)



CPT Codes

70336..... MRI of the Temporomandibular Joint(s)

Standard Anatomic Coverage

- Bilateral study, including open and closed mouth views, often performed with surface coils
- Images may be obtained in axial, (oblique) sagittal and (oblique) coronal planes.

Common Diagnostic Indications

Abnormal imaging findings

Follow up of abnormal or indeterminate findings on a prior imaging study when required to direct treatment

Arthropathy of the temporomandibular joints

Frozen jaw

Temporomandibular joint dysfunction

Evaluation of persistent symptoms when **all** of the following requirements are met:

- X-ray or Panorex has not provided sufficient information to guide treatment.
- Intervention is being considered.
- Symptoms have not improved with conservative treatment, including NSAIDs or acetaminophen, a short-term trial of soft diet and proper chewing techniques, and an oral appliance (such as a bite block).

Trauma to the temporomandibular joints

- Evaluation of meniscal position and integrity

Note: Conventional radiographs, Panorex views or CT of the TMJ are preferred for initial evaluation of trauma.

Computed Tomography (CT) Neck for Soft Tissue Evaluation



CPT Codes

- 70490..... CT, soft tissue neck, without contrast
- 70491..... CT, soft tissue neck, with contrast
- 70492..... CT, soft tissue neck, without contrast, followed by re-imaging with contrast

Standard Anatomic Coverage

- Axial images from the skull base to the clavicles

Technology Considerations

- CT is generally the modality of choice for the following indications: detection of sialolithiasis (salivary gland calculi); following trauma to the soft tissues of the neck; and during foreign body evaluation, after initial radiographic assessment for a radiopaque foreign body.

Common Diagnostic Indications

Abnormal imaging findings

Follow up of abnormal or indeterminate findings on a prior imaging study when required to direct treatment

Congenital anomaly

Diagnosis or management (including perioperative evaluation) of a suspected or known congenital or developmental anomaly of the soft tissue structures of the neck

Foreign body in the upper aero-digestive tract or surrounding neck tissue

- Following non-diagnostic neck radiograph

Hoarseness, dysphonia, or vocal cord weakness/paralysis

Initial evaluation when at least one of the following applies:

- Following laryngoscopy, when findings suggest recurrent laryngeal nerve dysfunction or identify a suspicious lesion
- Symptoms persisting longer than one month which are unexplained by laryngoscopy
- Presence of at least one of the following high risk features:
 - Tobacco use
 - Alcohol abuse
 - Hemoptysis
 - History of radiation therapy
 - Known head and neck malignancy

Horner's syndrome

Infectious disease

Diagnosis or management (including perioperative evaluation) of infection involving soft tissue structures in the neck

Inflammatory disease

Diagnosis or management of inflammatory disease involving soft tissue structures in the neck

Common Diagnostic Indications

Laryngeal edema

Lymphadenopathy

- When persistent and unexplained
-

Neck mass

- Evaluation of a palpable neck mass
 - Follow up of a non-palpable neck mass identified on a prior imaging study
 - Management (including perioperative evaluation) of known cystic neck mass or other benign tumor
-

Osteonecrosis of the jaw

Evaluation following non-diagnostic X-ray or Panorex

Parathyroid adenoma

- Evaluation of suspected adenoma following abnormal parathyroid ultrasound or scintigraphy
 - Localization of residual parathyroid tissue following failed parathyroidectomy
 - Preoperative planning in patients with aberrant anatomy
-

Salivary / parotid gland ductal calculi

Stridor

- For subacute and chronic stridor, soft tissue radiographs and ENT evaluation are required.
-

Thyroid nodule or thyromegaly (goiter)

- Following thyroid ultrasound or thyroid scintigraphy
 - When associated with mass effect on the upper airway or esophagus
 - For preoperative evaluation
-

Tracheal stenosis or upper airway obstruction

Traumatic injury to soft tissues of the neck

Tumor (primary neoplasm or metastatic disease)

Diagnosis of suspected malignancy based on exam findings or testing abnormalities

Management (including perioperative evaluation) of known malignancy when imaging is required to direct treatment

Exclusion: Advanced imaging is not indicated for surveillance imaging of non-Hodgkin's lymphoma for a patient in remission and there has been at least two (2) years since the most recent course of chemotherapy.

Note: Surveillance applies to patients with no signs or symptoms of recurrent or persistent disease.

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CPT Codes

- 70498..... CTA, neck, with contrast material(s), including noncontrast images, if performed, and image post-processing
- 70547..... MRA, neck, without contrast
- 70548..... MRA, neck, with contrast
- 70549..... MRA, neck, without contrast, followed by re-imaging with contrast

Standard Anatomic Coverage

- CTA and MRA of the neck involve image acquisitions from the aortic arch to the skull base, to visualize major vessels including the extracranial carotid arteries and vertebral arteries. The major venous structures may also be interrogated with CT and MR angiographic techniques.

Choice of Imaging Study

- Duplex Doppler ultrasound is a first line imaging study for most carotid indications.

Advantages of CTA

- Higher sensitivity for detection of mural calcification
- Absence of in-plane flow phenomenon which can exaggerate the degree of stenosis
- Improved detection of surgical clips and stents
- Shorter scan time, resulting in less motion artifact and better quality images

Advantages of MRA

- Provides information about the age of blood
- No need for iodinated contrast material
- No exposure to ionizing radiation

Common Diagnostic Indications

Abnormal imaging findings

Follow up of abnormal or indeterminate findings on a prior imaging study when required to direct treatment

Aneurysm or dissection of carotid or vertebral arteries

Carotid stenosis or occlusion

Diagnosis or management of known or suspected steno-occlusive disease

- Following abnormal or equivocal duplex Doppler study, unless the diagnosis is supported by clinical exam findings

Note: Screening for carotid disease utilizing advanced imaging is not appropriate.

Congenital or developmental vascular anomaly

Diagnosis or management (including perioperative evaluation) of a vascular anomaly of the carotid or vertebral arteries including arteriovenous malformation (AVM)

Horner's syndrome

Intramural hematoma

Post-operative or post-procedure evaluation

Common Diagnostic Indications

Preoperative or pre-procedure evaluation

Note: This indication is for preoperative evaluation of conditions not specifically referenced elsewhere in this guideline.

Exclusions:

- Screening for carotid disease using advanced imaging in preparation for coronary artery bypass graft (CABG) surgery is not considered appropriate.
- MRV (or CTV) in preparation for either a neurosurgical or percutaneous procedure to treat multiple sclerosis is not considered appropriate

Thromboembolic disease of major extracranial arterial and/or venous systems

Traumatic vascular injury to the extracranial carotid and vertebral arteries

Vasculopathy (including fibromuscular dysplasia and vasculitis)

Venous thrombosis or compression

Vertebrobasilar stenosis or occlusion

References

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