



CLINICAL GUIDELINES

Neck Imaging Policy

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eviCore healthcare Clinical Decision Support Tool Diagnostic Strategies: This tool addresses common symptoms and symptom complexes. Imaging requests for individuals with atypical symptoms or clinical presentations that are not specifically addressed will require physician review. Consultation with the referring physician, specialist and/or individual's Primary Care Physician (PCP) may provide additional insight.

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Neck Imaging Guidelines

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Abbreviations For Neck Imaging Guidelines

ALS	amyotrophic lateral sclerosis
CT	computed tomography
ENT	Ear, Nose, Throat
FNA	fine needle aspiration
GERD	gastroesophageal reflux disease
GI	gastrointestinal
HIV	human immunodeficiency virus
MRI	magnetic resonance imaging

Neck-1: General

- A current clinical evaluation (within 60 days), which includes a relevant history and physical examination and appropriate laboratory studies and non-advanced imaging modalities, such as plain x-ray or ultrasound, are required prior to considering advanced imaging. Other meaningful contact (telephone call, electronic mail or messaging) by an established patient can substitute for a face-to-face clinical evaluation
- Advanced imaging of the neck covers the following areas:
 - ◆ Skull base (thus a separate CPT® code for head imaging in order to visualize the skull base is not necessary).
 - ◆ Nasopharynx
 - ◆ Upper oral cavity to the head of the clavicle
 - ◆ Parotid glands and the supraclavicular region
- Ultrasound of the soft tissues of the neck including thyroid, parathyroid, parotid and other salivary glands, lymph nodes, cysts, etc. is coded as CPT® 76536. This can be helpful in more ill-defined masses or fullness and differentiating adenopathy from mass or cyst, to define further advanced imaging.
- Neck CT
 - ◆ A Neck CT is usually obtained with contrast only (CPT® 70491).
 - Little significant information is added by performing a Neck CT without and with contrast (CPT® 70492), and there is the risk of added radiation exposure, especially to the thyroid.
 - CT Neck without contrast (CPT® 70490) can be difficult to interpret due to difficulty identifying the blood vessels
 - Exception: Contrast is not generally used when evaluating the trachea with CT. Evaluate salivary duct stones in the appropriate clinical circumstance where intravenous contrast may obscure high attenuation stones
 - Contrast enhanced CT is helpful in the assessment of cervical adenopathy and preoperative planning in the setting of thyroid carcinomas
 - Contrast is recommended as an adjunct to US for patients with clinical suspicion for advanced disease, including invasive primary tumor, or clinically apparent multiple or bulky lymph node involvement
 - Contrast may cause intense and prolonged enhancement of the thyroid gland which interferes with radioactive iodine nuclear medicine studies.
 - Use of IV contrast is an important adjunct because it helps to delineate the anatomic relationship between the primary tumor and metastatic disease. Iodine is generally cleared within four to eight weeks in most patients, so concern about iodine burden from IV contrast causing a clinically significant delay in subsequent whole-body scans (WBSs) or radioactive iodine (RAI) treatment after the imaging followed by surgery is generally unfounded. The benefit gained from improved anatomic imaging generally outweighs any potential risk of a several week delay in RAI imaging or

therapy. Where there is concern, a urinary iodine to creatinine ratio can be measured.

➤ Neck MRI

- ◆ MR Neck is used less frequently than Neck CT.
- ◆ MRI Neck without and with contrast (CPT® 70543) is appropriate if CT suggests the need for further imaging or if ultrasound or CT suggests any of the following:
 - Neurogenic tumor (schwannoma, neurofibroma, glomus tumor, etc.)
 - Vascular malformations
 - Deep neck masses
 - Angiofibromas

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Neck-2: Cerebrovascular and Carotid Disease

- See these related topics in the Head Imaging Guidelines:
 - ◆ **HD-1.5: General Guidelines – CT and MR Angiography: (CTA and MRA)**
 - ◆ **HD-12: Aneurysm and AVM**
 - ◆ **HD-21: Stroke/TIA**
 - ◆ **HD-22: Cerebral Vasculitis**
 - ◆ **HD-23: Dizziness, Vertigo and Syncope**
 - ◆ **HD-31: Tinnitus**
 - ◆ **HD-32: Eye Disorder**
- See **PVD-3: Cerebrovascular and Carotid Disease** in Peripheral Vascular Disease Imaging Guidelines.

Neck-3: Dysphagia

Neck-3.1: Dysphagia

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Neck-3.1: Dysphagia

- Mass suspected, either intrinsic or extrinsic, to the esophagus.
 - ◆ Esophagram (Barium Swallow) evaluation is considered the initial study in the evaluation of dysphagia. These results can then lead to further evaluation with:
 - Endoscopy, and/or¹
 - CT Neck with contrast (CPT® 70491), and/or CT Chest with contrast (CPT® 71260), and/or CT Abdomen with contrast (CPT® 74160) (if requested).²
- Dysmotility suspected²
 - ◆ Esophagram and Motility study
- Vascular Ring suspected¹
 - ◆ CT angiography Chest with contrast can be used in the evaluation of suspected vascular ring.
 - ◆ MRI Chest without contrast, or MRI Chest without and with contrast (CPT® 71550 or CPT® 71552), can be performed if vascular ring is suspected.
- Globus Sensation
 - ◆ Findings typical of globus sensation (lump in the throat) need no advanced imaging and have a benign natural history.^{2,3,4}
 - ◆ If the diagnosis is unclear or the clinician cannot adequately visualize the pharynx, after examination and laryngoscopy, the following imaging can be considered:
 - Esophagram
 - Endoscopy and/or
 - X-ray pharynx dynamic and static imaging.^{2,3,4}
 - ◆ Dysphagia, weight loss, odynophagia, throat pain and hoarseness
 - Neck CT with contrast (CPT® 70491)⁴
 - Current or previous upper aerodigestive or esophageal malignancy, or lymphoma
 - Previous neck, esophageal, or gastric surgery
 - Palpable neck abnormality (see: **NECK-6: Neck Masses**)

Practice Notes

- A detailed history of the dysphagia symptoms is important to distinguish neurogenic, pharyngeal and esophageal disorders.
- Dysphagia (difficulty swallowing) can be caused by a wide range of benign and malignant causes that affects the body's ability to move food or liquid from the mouth to the pharynx and into the esophagus.
- A short duration (weeks to months) of rapidly progressive esophageal dysphagia with associated weight loss is highly suggestive of esophageal cancer.
- A study including 148 neck CTs and 104 barium esophagrams done for the evaluation of globus sensation, found no malignancies.^{5, 6}

- (See **ONC-9: Esophageal Cancer** in the Oncology Imaging Guidelines).

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Neck-4: Esophagus

Neck-4.1: Imaging

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Neck-4.1: Imaging

- CT Neck, Chest and/or Abdomen all with contrast (CPT® 70491, CPT® 71260, and/or CPT® 74160) can be performed to evaluate any of the following:
 - ◆ GERD, sliding or paraesophageal hiatal hernias: preoperative planning, (CT Chest and/or Abdomen)¹
 - ◆ Hiatal hernia surgery: for GI Specialist or surgeon treatment/pre-operative planning or signs/symptoms of a potential complication, (CT Chest and Abdomen)
 - ◆ Mallory Weiss tear: suspected after endoscopy, (CT Chest and Abdomen)
 - ◆ Esophageal cancer: biopsy proven
 - ◆ See: **ONC-9:Esophageal Cancer** in the Oncology Imaging Guidelines
 - ◆ Esophageal perforation: suspected (CT Neck and/or Chest and/or Abdomen)
 - ◆ Esophageal diverticulum: Depending on location, any of the CT studies above can be used
- CT Neck and/or Chest or MRI Neck and/or Chest (CPT® 70543 and/or CPT® 71552) **and** endoscopic ultrasound (CPT® 76975) can be used for leiomyoma, depending on the location.
- Suspected foreign body obstructing the esophagus should be evaluated with x-ray.
 - ◆ If x-ray is negative, use contrast study such as esophagram.
 - ◆ A location appropriate CT can be used for further evaluation.
- Any type of esophageal stricture (radiation, peptic, lye, neoplastic, postoperative, drug-induced, Crohn's disease, Schatzki's ring, esophageal web) should be evaluated with esophagram (barium swallow) and endoscopy prior to CT.
 - ◆ If esophagram findings are negative, use CT of appropriate location.¹
- Esophageal motility study (CPT® 78258) can be considered for any of the following:
 - ◆ Dysphagia associated with chest pain and difficulty swallowing both solids and liquids
 - ◆ Gastroesophageal reflux
- Gastroesophageal Reflux Study (CPT® 78262) can be considered for any of the following:
 - ◆ Chronic heartburn
 - ◆ Dysphagia
 - ◆ Family history of Barrett's esophagus or esophageal carcinoma
- Gastric Mucosa Imaging (CPT® 78261)
 - ◆ To evaluate Barrett's esophagus when there is dyspepsia or esophagitis.
- Globus (Pharyngeus, "Hystericus") sensation, Lump in throat (see **Neck-3.1: Dysphagia**)

Practice Notes

- A variety of mechanical and motility lesions occur in the esophagus. Dysphagia is difficulty swallowing; odynophagia is painful swallowing.

Neck-5: Cervical Lymphadenopathy

Neck-5.1: Imaging

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Neck-5.1: Imaging

- Ultrasound (CPT® 76536) can be considered for any of the following:^{1,2}
 - ◆ Inflammatory, infective, or reactive adenopathy but has failed a 2 week trial of treatment or observation (including antibiotics if appropriate).
 - ◆ To further evaluate an ill-defined mass
 - ◆ High suspicion of malignancy
- Neck CT with contrast (CPT® 70491) can be considered if:²
 - ◆ Carcinoma found in a lymph node or in an organ known not to be primary (see: **ONC-31.7: Carcinoma of Unknown Primary Site**)
 - ◆ Ultrasound is indeterminate or suspicious for malignancy.

Practice Notes

- Chest x-ray is helpful to identify primary lung disease, involvement of mediastinal lymph nodes or other metastases.
- Inflammatory neck adenopathy is often associated with upper respiratory infection, pharyngitis, dental infection. Occasionally, it is associated with sarcoidosis, toxoplasmosis and HIV.
- Most common causes of neoplastic adenopathy are metastasis from head and neck tumors and lymphoma.

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Neck-6: Neck Masses

Neck-6.1: Imaging

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- See **Pediatric Neck Imaging Guidelines**, if under age 18.

Neck-6.1: Imaging

- Ultrasound (CPT® 76536) is the initial study for:¹
 - ◆ Anterior neck masses
 - ◆ Lateral or posterior neck masses that are tender and have been observed for 2 weeks under physician care and reassessed (generally an acute, infections, or inflammatory mass).
 - ◆ Otherwise ill-defined masses, fullness or asymmetry
- Neck CT with contrast (CPT® 70491) is supported for:¹
 - ◆ Lateral or posterior neck masses that are non-tender and discrete in the adult (> age 18)
 - ◆ History of malignancy that would be primary or metastatic to the neck
 - ◆ Suspected peritonsillar, retropharyngeal or other head and neck abscesses
 - ◆ If sarcoidosis is suspected the Neck CT with contrast (CPT® 70491) should be followed by biopsy.
 - ◆ Preoperative evaluations of any neck mass
- Neck MRI without and with contrast (CPT® 70543) if:¹
 - ◆ CT suggests the need for further imaging.
 - ◆ Ultrasound or CT suggests neurogenic tumor (schwannoma, neurofibroma, glomus tumor, etc.), vascular malformations, deep neck masses and angiofibromas.
- Uncomplicated Pharyngitis or Tonsillitis should undergo conservative therapy including antibiotics, if appropriate. Advanced imaging is not indicated.²

Practice Notes

- Although CT is considered the preferred initial modality in neck mass in adults, the use of US is steadily increasing and should be considered when malignancy is not obvious.
- Most lateral neck masses are enlarged lymph nodes.
- Malignancy is a greater possibility in adults that are heavy drinkers and smokers.
- ENT evaluation can be helpful in determining the need for advanced imaging.
- Although CT and MRI can have characteristic appearances for certain entities, biopsy and histological diagnosis are the only way to obtain a definitive diagnosis.

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Neck-7: Malignancies Involving the Neck

- See the following in the Oncology Imaging Guidelines:
 - ◆ **ONC-3: Squamous Cell Carcinomas - Head and Neck**
 - ◆ **ONC-4: Salivary Gland Cancers**
 - ◆ **ONC-6: Thyroid Cancer**
 - ◆ **ONC-9: Esophageal Cancer**
 - ◆ **ONC-27: Non-Hodgkin Lymphoma**
 - ◆ **ONC-28: Hodgkin Lymphoma**

Neck-8: Recurrent Laryngeal Palsy

- See: **HD-7: Recurrent Laryngeal Palsy** in the Head Imaging Guidelines

Neck-9: Thyroid and Parathyroid

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Neck-9.3: Parathyroid Imaging	22

Neck-9.1: Thyroid Nodule

- **Ultrasound (US) of the Neck** (CPT® 76536) is the appropriate initial study for anterior neck masses, including goiter and thyroid^{2,6} mass(es) (see: **Neck-6.1: Imaging**). US is also appropriate for evaluation of thyroid nodules in the following clinical scenarios:
 - ◆ Normal or High serum thyrotropin (TSH)^{1,3,6}
 - ◆ Low TSH and nuclear scan shows non-functioning nodule.^{1,6,8}
 - ◆ Incidentally found on CT, MRI, or PET (focal activity).^{2,3,6}
 - ◆ Nodules ≤ 1 cm with very low suspicion US pattern including spongiform pattern and pure cysts do not require repeat US.⁶
 - ◆ For more suspicious or larger nodules, if Fine Needle Aspiration (FNA) is not performed or was not diagnostic for malignancy, US can be repeated:
 - If US features are highly suspicious: repeat US every 6 months for up to 24 months.
 - If US features are of low to intermediate suspicion: repeat US at 12 and 24 months.
 - If nodule is stable after 24 months, follow-up ultrasound exams (CPT® 76536) can be performed every 3 to 5 years for interval surveillance.¹²
- FNA should be considered for thyroid nodules using the American Thyroid Association criteria listed below. Note that FNA procedures do not require prior authorization.⁶

Sonographic Pattern	US features	Estimated risk % of Malignancy	FNA size cutoff (largest dimension)
High Suspicion	Solid hypoechoic nodule or solid hypoechoic component of a partially cystic nodule with one or more of the following features: Irregular margins (infiltrative, microlobulated), microcalcifications, taller than wide shape, rim calcifications with small extrusive soft tissue component, evidence of ETE	>70-90	Recommend FNA at ≥ 1 cm
Intermediate Suspicion	Hypoechoic solid nodule with smooth margins without microcalcifications, ETE, or taller than wide shape	10-20	Recommend FNA at ≥ 1 cm
Low Suspicion	Isoechoic or hypoechoic solid nodule, or partially cystic nodule with eccentric solid areas, without microcalcifications, irregular margin or ETE, or taller than wide shape	5-10	Recommend FNA at ≥ 1.5 cm
Very Low Suspicion	Spongiform or partially cystic nodule without any of the sonographic features described in low, intermediate, or high suspicion patterns	<3	Consider FNA at ≥ 2 cm Observation without FNA is also a reasonable option
Benign	Purely cystic nodules (no solid component)	<1	No biopsy

(Source: [2015 American Thyroid Management Guideline for Adult Patients with Thyroid Nodules and Differentiated Thyroid Cancer](#))

See also **TI-RADS**¹²

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Thyroid

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Parathyroid

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Neck-10: Trachea and Bronchus

Neck-10.1: Imaging

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Neck-10.1: Imaging

- Plain x-rays of the neck and chest and bronchoscopy are the initial imaging studies for evaluating patients with suspected tracheal and visualized bronchial pathology. Bronchoscopy can further evaluate the distal (endo) bronchial tree.
 - ◆ Suspected tracheal disease can be identified by inspiratory stridor and a characteristic flow-volume loop of PFTs.¹
- Neck CT with contrast (CPT® 70491) or without contrast (CPT® 70490) and/or Chest CT with contrast (CPT® 71260) or without contrast (CPT® 71250) can be performed to further evaluate abnormalities, which include tracheal or bronchial tumor, foreign bodies, or persistent segmental or lobar lung collapse seen on other imaging studies based on the physician's preference.^{1,2}
- Expiratory HRCT (CPT® 71250) is indicated in patients with obstructive physiology tracheomalacia and can also be useful in the evaluation of interstitial lung disease.¹
- Trachea or bronchial "inspissation" without an abnormality described above, is not a risk for malignancy.³

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Neck-11: Neck Pain

Neck-11.1: Neck Pain (Cervical)	29
Neck-11.2: Torticollis and Dystonia	29

Neck-11.1: Neck Pain (Cervical)

- Neck pain is usually related to a specific process including pharyngitis, radiculopathy, adenopathy, mass, carotid dissection and torticollis, and therefore found elsewhere in these guidelines.¹
- For the evaluation of neck pain or other symptoms which may involve the cervical spine, including myelopathy and cervical radiculopathy ¹ see: **Spine Imaging Guidelines**

Neck-11.2: Torticollis and Dystonia

Newborn Infant:

- Ultrasound of the Neck is the initial study to determine if congenital muscular torticollis is present
 - ◆ Positive→No further imaging is needed since the diagnosis is defined
 - ◆ Negative→CT Neck with contrast (CPT® 70491) or MRI Neck without and with contrast (CPT® 70543) to potentially identify other etiologies

Older Child (beyond infancy) or Adult

- For trauma, CT Neck with contrast (CPT® 70491) and/or CT Cervical Spine without contrast (CPT® 72125) is the initial study to identify fracture or mal-alignment
- For no trauma, CT Neck with contrast (CPT® 70491), and/or MRI Cervical Spine without contrast (CPT® 72141), or CT Cervical Spine without contrast (CPT® 72125) is the initial study to locate a soft tissue or neurological cause
 - ◆ Positive→Further advanced imaging is not required if CT Neck or CT Cervical Spine has identified local cause
 - ◆ Negative→MRI Brain without and with contrast (CPT® 70553) to exclude CNS cause

Practice Notes

- Torticollis or cervical dystonia is an abnormal twisting of the neck with head rotated or twisted. Its causes are many and may be congenital or acquired and caused by trauma, infection/inflammation, neoplasm and those less defined and idiopathic. It occurs more frequently in children and on the right side (75%).
- Retropharyngeal space abscess could be associated with torticollis because child would not move neck freely.

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Neck-12: Salivary Gland Disorders

- Xerostomia (Dry Mouth)
 - ◆ Salivary Gland Nuclear Imaging (one of CPT® 78230, CPT® 78231, or CPT® 78232) can be considered for any one of the following:
 - Dry mouth and either:
 - Sjögren's syndrome
 - Sialadenitis
 - History of head or neck radiation therapy
 - History of cerebral palsy
 - Parotid mass to allow preoperative diagnosis of Warthin's tumor
- Salivary Gland Stones:¹
 - ◆ For suspected salivary duct or gland stone, CT of the Neck without contrast (CPT® 70490) or CT of the Neck without and with contrast (CPT® 70492) or CT of the Maxillofacial area without and with contrast (usually CPT® 70488) or MRI Neck without and with contrast (CPT® 70543).
 - ◆ Sialography (contrast dye injection) under fluoroscopy, may be performed to rule out a stone, with post sialography CT (CPT® 70486), **or** post sialography MRI (CPT® 70540).
- Parotid Mass
 - ◆ Any one of the following can be approved:²
 - MRI Orbits/Face/Neck without and with contrast (CPT® 70543)
 - CT Neck with contrast (CPT® 70491)
 - CT Neck without contrast (CPT® 70490)
 - In addition to one of the above:
 - Salivary Gland Nuclear Imaging (CPT® 78230, CPT® 78231, or CPT® 78232) is indicated If salivary gland stone is suspected, CT of the maxillofacial area without and with contrast (usually CPT® 70488) or Neck MRI without and with contrast (CPT® 70543) can be considered in place of Neck CT.

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