PHYSICIAN GUIDELINES

Current, Evidence-based Recommendations Regarding Imaging
How to Navigate the Evidence-Based Clinical Criteria

This document includes all of the evidenced based criteria that are used to determine medical necessity for advanced imaging.

The following steps will assist you in determining if your request meets medical necessity:

1. Enter the CPT code you are requesting in the search function of the adobe document then select enter. You will be directed to the table of contents and the code you are looking for will be highlighted. Check the code and if it is correct click it and you will be directed to the evidenced based clinical criteria for that CPT code.

2. Identify the indication (by Roman numeral) that most closely describes the clinical problem or working diagnosis.

3. If the indication is not listed, your request will require review by a medical director. Be sure to enter all relevant information in the free text portion of the web based review or provide it to the clinical reviewer if you are using the telephone.

4. If the clinical indication is listed, additional information may be required in order to demonstrate medical necessity. If additional information is required [brackets] will indicate which sub elements are necessary.

   The statement in [brackets] only refers to the outline level immediately below the indicator with the bracketed statement. For example you may see [One of the following]. This means that additional information listed under A or B or C etc is needed. You may see [both] which means that information for both A and B is needed to meet medical necessity. You may see [All] which means that all of the elements listed under the Roman numeral are needed to meet medical necessity.

5. The following is an example of how to use the bracketed statements:

   The indication selected for MRI of the brain without contrast (CPT code 70551) is demyelinating disease (includes MS). At the level of the Roman numeral the brackets indicate that information related to one of the sub elements A or B is needed to meet medical necessity. At the outline level of A Suspected MS the brackets indicate that one of the symptoms, 1-14, should be present to meet medical necessity. If B is chosen (known MS) then information related to sub element 1 or 2 must be present. If 2 is selected then one of the symptoms or complaints (a-n) must be present to meet medical necessity.

I. Demyelinating disease (includes MS) [one of the following]^{15-20}
   A. Suspected MS [One of the following]
      1. Difficulty walking
      2. Numbness
      3. Bladder dysfunction
      4. Optic neuritis
      5. Weakness of arms or legs
6. Difficulty with balance  
7. Vertigo  
8. Hearing loss  
9. Constipation  
10. Memory loss  
11. Lhermitte’s sign  
12. Double vision  
13. Blurred vision  
14. Painful movement of the eye or  
15. Nystagmus  
16. Impaired coordination or  

B. Known MS [One of the following] (MRI with contrast is often preferred but non contrast may be approved if requested.)  
1. Annual scan in asymptomatic or stable member with known MS  
2. New or worsening clinical findings [One of the following]  
   a. Difficulty walking  
   b. Numbness  
   c. Bladder dysfunction  
   d. Optic neuritis  
   e. Weakness of arms or legs  
   f. Difficulty with balance  
   g. Vertigo  
   h. Hearing loss  
   i. Constipation  
   j. Memory loss  
   k. Lhermitte’s sign  
   l. Double vision  
   m. Blurred vision  
   n. Painful movement of the eye

6. URLs for sources have been included with the references. If the reader selects a reference from to the Centers for Medicare & Medicaid Services website, the user will must accept the end License Agreement before being directed to the appropriate reference.

Any reference that refers the reader to the National Comprehensive Cancer Network website requires the reader to enter a username and password to access the appropriate reference. This can be obtained free of charge at the main login page for this website.
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0159T  Breast MRI CAD

This procedure is considered to be investigational/experimental for the above-mentioned health plan.

Clinical criteria reviewed/revised: 8/22/11, 11/17/10
I. **Clinical symptoms [One of the following]¹⁻⁴**
   A. **Physical [One of the following]**
      1. Clicking, popping or grating of one or both TMJs
      2. Locking of jaw when opening mouth
      3. Unable to open mouth comfortably
      4. Mandible (jaw) deviates to one side on opening mouth
      5. Physical limitation of opening or closing mouth
      6. Pain or tenderness of masseter muscle (TMJ or side of face) on direct palpation
      7. Facial pain or swelling with pain and/or tenderness over the TMJ and no improvement following at least 3 weeks of anti-inflammatory medication

II. **Internal derangement of the joint including cartilage abnormalities of the TMJ**
References:


Additional Medicare References:

5. Local Coverage Determination for Magnetic Resonance Imaging (L28723), Wisconsin Physicians Service Insurance Corporation, Iowa, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=17&CntrctrType=1%7c9&KeyWord=70336&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=70336&kq=true&bc=IAAAAAA.
10. Local Coverage Determination for Magnetic Resonance Imaging (L28723), Wisconsin Physicians Service Insurance Corporation, Nebraska, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=36&CntrctrType=1%7c9&KeyWord=70336&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=70336&kq=true&bc=IAAAAAAA.

70336 MRI Temporomandibular Joint

Clinical criteria reviewed/revised: 7/19/12, 8/22/11, 11/17/10, 12/09, 1/21/09
Medical Advisory Committee reviewed and approved: 4/4/12
70450  CT of the Head or Brain without Contrast
70460  CT of the Head or Brain with Contrast
70470  CT of the Head or Brain without and with Contrast

If there is an indication that MR is preferred or strongly preferred, this indicates that CT is not the preferred choice or is a poor substitution. In those instances all efforts should be made to perform MRI as the best imaging test for the clinical indication.

I.  Head trauma\(^1,2\) [One of the following]
   A.  Amnesia
   B.  Altered level of consciousness or loss of consciousness
   C.  Vomiting
   D.  Focal neurologic finding [One of the following]
      1.  Papilledema
      2.  Vomiting
      3.  Personality changes
      4.  Drowsiness
      5.  Seizure
      6.  Confusion
      7.  Memory loss
      8.  Gait disturbance
      9.  Paralysis or weakness on one side of the body or face
     10.  Visual changes
     11.  Cranial nerve palsy
     12.  Headache
     13.  Nystagmus
     14.  Dysarthria
     15.  Dysphagia
     16.  Ataxia
   E.  Headache
   F.  Seizure
   G.  Coagulopathy
   H.  Interval follow up of known subdural, epidural or subperiosteal hematoma

II.  Abrupt onset of a neurologic deficit- including stroke and TIA [One of the following]\(^3,4\)
   A.  Motor weakness affecting a limb, or one side of the face or body
   B.  Decreased sensation affecting a limb, or one side of the face or body
   C.  Acute ataxia (unsteady and clumsy motion of the limbs or trunk)
   D.  Mental confusion including memory loss and disorientation
   E.  Impaired vision, including amaurosis fugax, visual field loss and diplopia
   F.  Aphasia (loss or impairment of the ability to produce or comprehend language due to brain damage)
G. Dysarthria (speech disorder resulting from neurological injury)
H. Dysphagia with no GI cause
I. Vertigo with either headache or nystagmus
J. Numbness, tingling, paresthesias
K. Syncope
L. Decreased level of consciousness
M. Papilledema
N. Stiff neck
O. New onset of severe headache
P. Drowsiness
Q. New onset of vomiting
R. Nystagmus
S. Cranial nerve palsy
T. Gait disturbance
U. Personality or behavioral changes
V. New seizure
W. Hearing loss or new onset tinnitus

III. Re-evaluation after stroke [One of the following]
A. Anti-coagulation planned or
B. Deteriorating clinical status with new or worsening neurologic findings [One of the following]
   1. Motor weakness affecting a limb, or one side of the face or body
   2. Decreased sensation affecting a limb, or one side of the face or body
   3. Acute ataxia (unsteady and clumsy motion of the limbs or trunk)
   4. Mental confusion Impaired vision, including amaurosis fugax, visual field loss and diplopia or
   5. Aphasia (loss or impairment of the ability to produce or comprehend language due to brain damage)
   6. Dysarthria (speech disorder resulting from neurological injury)
   7. Dysphagia with no GI cause
   8. Vertigo with either headache or nystagmus
   9. Numbness, tingling, paresthesias
  10. Syncope
  11. Decreased level of consciousness
  12. Papilledema
  13. Stiff neck
  14. New onset of severe headache
C. Repeat after recent hemorrhagic stroke

IV. Headache, indications for imaging⁵-⁷ (MRI preferred except for E, K and L) [One of the following]
A. Syncope
B. Papilledema
C. Worsened by Valsalva maneuver, coughing straining or postural changes
D. Wakens from sleep
E. Suspected subarachnoid hemorrhage (CT preferred in early phase) with one of the following
1. With sudden onset of severe, exertional, or “thunderclap” headache
2. Associated with nausea, vomiting, diplopia, seizure, mental status change, or syncope
3. History of prior known (documented on CTA, MRA or angiogram) aneurysm or AVM
F. Infection in an extracranial location
G. Change in mental status, personality, or level of consciousness
H. Suspected carotid artery dissection [One of the following] (MRI without and with contrast preferred)
   1. Neck pain
   2. Unilateral facial or orbital pain
   3. Unilateral headaches
   4. Horner’s syndrome, miosis and ptosis (contraction of the iris, drooping eyelid) or
   5. Transient ischemic attacks (TIA)
   6. Minor neck trauma
   7. Rapid onset of headache with strenuous exercise or Valsalva maneuver
I. Head pain that spreads into the lower neck and between the shoulders (may indicate
   meningeal irritation due to either infection or subarachnoid blood; it is not typical of a benign
   process)
J. Suspected subdural hematoma with history of major head trauma or minor head trauma in an
   individual on anticoagulants
K. Thunderclap headache (CT preferred)
L. Worst headache of life (CT preferred)
M. New headache [One of the following]
   1. Abnormal neurologic examination [One of the following]
      a. Papilledema
      b. Vomiting
      c. Personality changes
      d. Drowsiness
      e. Seizure
      f. Confusion
      g. Memory loss
      h. Gait disturbance
      i. Paralysis or weakness on one side of the body or face
      j. Visual changes
      k. Cranial nerve palsy
      l. Headache
      m. Nystagmus
      n. Dysarthria
      o. Dysphagia
   2. Aural temperature > 38.3°C or 100.9°F
   3. Stiff neck (nuchal rigidity)
   4. History of cancer
   5. History of HIV infection
   6. History of TB
   7. History of sarcoidosis
   8. Age 5 years or less
   9. Over age 50
   10. Pregnancy
11. Headache with exertion
12. Documented infection outside the brain
13. Mental status changes
14. Extracranial malignancy
N. Progressive worsening of headache
O. Numbness or tingling
P. New onset of chronic daily headache
Q. Known neurofibromatosis

V. **Seizure**\(^8-10\) [One of the following] (MRI with gadolinium is strongly preferred.)
A. Initial evaluation of new onset of seizures
B. In patients with a known seizure disorder who experience an increase in seizure activity or are refractory to treatment at adequate dosage
C. Suspicion of migration anomalies or other morphologic brain abnormalities in children
D. Suspicion of cortical dysplasia

VI. **Infection or abscess**\(^11,12\) with findings to support infection and neurological symptoms or complaints (MRI with gadolinium is strongly preferred.)
A. Findings suggesting infection [One of the following]
   1. Aural temperature > 38.3°C or 100.9°F
   2. Leukocytosis, WBC >11,500/cu.mm
   3. Known infection elsewhere
   4. Immunocompromised patient
B. Neurological symptoms or complaints [One of the following]
   1. Headache
   2. Drowsiness or confusion
   3. Motor sensory or speech disorders
   4. Vomiting
   5. Seizure
   6. Stiff neck
   7. Photophobia
   8. Recurrence of symptoms after antimicrobial therapy
C. Follow-up during and after completion of therapy to assess effectiveness

VII. **Brain tumor**\(^13-21\) (MRI is strongly preferred and is the procedure of choice unless there is an absolute contraindication to MRI which cannot be overcome.) Brain tumors include but are not limited to any of the following:
   - Astrocytoma
   - Choroid plexus papilloma
   - Ependymoma
   - Glioblastoma multiforme
   - Hemangioblastoma
   - Medulloblastoma
   - Meningioma
   - Oligodendroglialoma
   - Pituitary adenoma
Primitive neuroectodermal tumor (PNET)

A. Evaluation of **known primary brain tumor** [One of the following]
   1. New signs and symptoms or worsening neurological condition [One of the following]
      a. Papilledema
      b. Vomiting
      c. Personality changes
      d. Drowsiness
      e. Seizure
      f. Confusion
      g. Memory loss
      h. Gait disturbance
      i. Paralysis or weakness on one side of the body or face
      j. Visual changes
      k. Cranial nerve palsy
      l. Headache
      m. Nystagmus
      n. Dysarthria
      o. Dysphagia
   2. Interval re-evaluation of known brain tumor – anaplastic astrocytoma, anaplastic oligodendroglioma or glioblastoma multiforme or any high grade or aggressive primary brain tumor [One of the following]
      a. Re-image after surgery (complete or subtotal)
      b. Image 2-6 weeks after completion of radiation therapy
      c. Following completion of chemotherapy
      d. Every 60-120 days for 2-3 years if asymptomatic
      e. New signs and symptoms (see 1 above) regardless of date of last imaging
   3. Other primary intracranial cancers may be imaged at completion of treatment and thereafter at 90 to 180 day intervals **if clinically stable**

B. **Evaluation for known or suspected brain metastases** in patients with known extracranial malignancy [One of the following]
   1. Routine initial staging for one of the following:
      a. Sarcoma
      b. Melanoma
      c. Small-cell lung cancer
      d. Non-small cell lung cancer
   2. New neurological signs or symptoms with **any known malignancy** [One of the following]
      a. Papilledema
      b. Vomiting
      c. Personality changes
      d. Drowsiness
      e. Seizure
      f. Confusion
      g. Memory loss
      h. Gait disturbance
      i. Paralysis or weakness on one side of the body or face
      j. Visual changes
      k. Cranial nerve palsy
l. Headache
m. Nystagmus
n. Dysarthria
o. Dysphagia
p. Ataxia

3. Follow-up known brain metastases during or after chemotherapy [One of the following]
   a. Follow-up after intervention to establish a new baseline
   b. Imaging (preferably MRI) every 3 months for 1 year after completion of therapy
   c. After one year imaging is performed based on clinical signs and symptoms
   d. Melanoma stage IIB or higher annually

4. Follow-up known brain metastases after whole brain radiation therapy [One of the following]
   a. Follow-up after intervention to establish a new baseline then every 6 weeks for 3 months and then
   b. Imaging (preferably MRI) every 3 months for 1 year after completion of therapy
   c. After one year imaging is performed based on clinical signs and symptoms
   d. Melanoma stage IIB or higher annually

5. Follow-up known brain metastases after stereotactic or CyberKnife® radiation treatment
   a. Every 6 weeks x 2, then every 12 weeks x 2, then every 3-6 months if stable

6. Follow-up known brain metastases after surgery [One of the following]
   a. Follow up after intervention to establish a new baseline then every 6 weeks for 3 months and then
   b. Imaging (preferably MRI) every 3 months for 1 year after completion of treatment
   c. After one year imaging is performed based on clinical signs and symptoms
   d. Melanoma stage IIB or higher annually

7. Known brain metastasis with new or worsening symptoms as indicated in number B 2
   C. Cranial nerve palsy (MRI strongly preferred)

<p>| 1st | Olfactory | Loss or disturbance of the sense of smell. |
| 2nd | Optic | Blindness of various types, depending on lesion location. |
| 3rd | Occulomotor | Ptosis (drooping) of eyelid, deviation of the eyeball outward, dilatation of the pupil, double vision. |
| 4th | Trochlear | Rotation of the eyeball upward and outward, double vision. |
| 5th | Trigeminal | Sensory root: Pain or loss of sensation in face, forehead, temple, and eye. Motor root: Deviation of the jaw toward paralyzed side, difficulty in chewing. |
| 6th | Abducens | Deviation of the eye outward, double vision. |
| 7th | Facial | Paralysis of all the muscles on one side of the face, inability to wrinkle the forehead, close the eye or whistle. Deviation of the mouth toward the sound side. Decreased sense of taste. |
| 8th | Vestibulocochlear | Deafness or ringing in the ears, dizziness, nausea and vomiting, reeling. |
| 9th | Glossopharyngeal | Disturbance of taste. Difficulty in swallowing. |
| 10th | Vagus | Paralysis of the main trunk on one side causes hoarseness and difficulty in swallowing and talking. |
| 11th | Spinal accessory | Drooping of the shoulder. Inability to rotate the head away from the affected side. Weakness of the trapezius and/or sternocleidomastoid. |</p>
<table>
<thead>
<tr>
<th>12th</th>
<th>Hypoglossal</th>
<th>Paralysis of one side of the tongue. Deviation of the tongue toward the paralyzed side. Thick speech.</th>
</tr>
</thead>
</table>

D. Suspected brain tumor
   1. New onset of neurologic findings [One of the following]
      a. Papilledema
      b. Vomiting
      c. Personality changes
      d. Drowsiness
      e. Seizure
      f. Confusion
      g. Memory loss
      h. Gait disturbance
      i. Paralysis or weakness on one side of the body or face
      j. Visual changes
      k. Cranial nerve palsy
      l. Headache
      m. Nystagmus
      n. Dysarthria
      o. Dysphagia
      p. Ataxia

VIII. Suspected pituitary disease (microadenoma, macroadenoma) (MRI of the brain with gadolinium is strongly preferred. CT should not be performed for this indication unless MRI is contraindicated.)22-28 [One of the following]

A. Elevated pituitary hormones including precocious puberty [One of the following]
   1. Prolactin (PRL) >20 ng/mL [g/L]
   2. Growth hormone (GH) >5 ng/mL [g/L]
   3. Thyroid stimulating hormone (TSH) >4 U/mL [mcIU/L]
   4. Follicular stimulating hormone (FSH)
      a. Male: >10 mIU/mL
      b. Female: (mIU/mL)
         i. Follicular phase >13
         ii. Luteal phase >13
         iii. Midcycle >22
         iv. Postmenopausal >150
   5. Luteinizing hormone (LH)
      a. Male: >8 mIU/mL
      b. Female: (mIU/mL)
         i. Follicular phase >12
         ii. Luteal phase >15
         iii. Midcycle peak >77
         iv. Postmenopausal >40
   6. Adrenocorticotropic hormone (ACTH) >46 pg/mL

B. Hypopituitarism including hypogonadism [One of the following]
   1. Pituitary apoplexy [One of the following]
a. Acute headache with vomiting  
b. Ophthalmoplegia  
c. Amaurosis  
d. Depressed level of consciousness  
e. Bitemporal hemianopsia  

2. Acquired hypopituitarism [One of the following]  
a. Cranial irradiation  
b. Brain surgery  
c. Head trauma  
d. Empty sella  
e. Hemochromatosis  
f. Prior brain infection  
g. Known pituitary tumor  
h. Langerhans cell histiocytosis of the pituitary  

3. Gonadotropin deficiency or hypogonadism [One of the following]  
a. Male [All]  
   i. History [One of the following]  
      01. Loss of libido  
      02. Impotence  
      03. History of undescended testicle or cryptorchism  
      04. History of testicular failure  
      05. History of chemotherapy or radiation therapy  
      06. Visual field disorder  
      07. Decreased body hair  
      08. Galactorrhea  
      09. Gynecomastia  
   ii. Laboratory tests  
      01. Normal to low normal free testosterone, LH and FSH  

b. Female [All]  
   i. Oligomenorrhea or amenorrhea  
   ii. Low normal LH, FSH  

4. TSH deficiency < .4 and low to low-normal T4 and T3  

5. ACTH deficiency  

6. ADH deficiency  

7. Growth hormone deficiency [One of the following]  
a. Adults [One of the following]  
   i. History of radiation or surgery to the pituitary or hypothalamic region  
   ii. Decreased levels of 3 or more pituitary hormones (TSH, LH, FSH, ACTH, GHRH, ADH)  
   iii. Decreased levels of IGF-I (Insulin-like growth factor I) based on laboratory normal range  
   iv. Insulin tolerance test (contraindicated in individuals with history of seizures or coronary artery disease)  
      01. Growth hormone response < 5 micrograms/L  
   v. Arginine stimulating test  
      01. Growth hormone response < 5 micrograms/L
b. Children with no evidence of malignancy, Crohn’s disease, renal disease, hypothyroidism or Turner’s syndrome and one of the following
   i. Bone age more than 2 standard deviations below the mean for age
   ii. History of surgery or radiation in the pituitary or hypothalamus regions
   iii. Growth hormone levels below normal (<10 micrograms/ml)
   iv. History of intrauterine growth retardation
   v. Prader-Willi syndrome
   vi. Children over the age of 1
      01. Insulin tolerance test positive with GH response < 10 micrograms/L
   vii. Neonate random growth hormone level < 20 micrograms/L

8. Visual problems [One of the following]
   a. Bitemporal visual field loss – loss of peripheral vision bilaterally
   b. Optic atrophy
   c. Drooping eyelid
   d. Diabetes insipidus

C. Known pituitary tumor (adenoma, microadenoma, macroadenoma)
   1. Following transsphenoidal resection
   2. Following radiation therapy
   3. New signs or symptoms such as visual changes, new headache, new onset of vomiting, papilledema, drooping eyelid, optic atrophy
   4. Follow-up of asymptomatic nonfunctioning microadenoma < 6mm in size
      a. MRI at one year
      b. MRI every 1-2 years for 3 years and then less frequently as long as tumor does not increase in size
   5. Follow-up of asymptomatic nonfunctioning macroadenoma 6 months after the initial diagnosis and then annually

IX. Evaluation after intervention or surgery [One of the following]
A. New or worsening neurologic condition [One of the following]
   1. Papilledema
   2. Vomiting
   3. Personality changes
   4. Drowsiness
   5. Seizure
   6. Confusion
   7. Memory loss
   8. Gait disturbance
   9. Paralysis or weakness on one side of the body or face
   10. Visual changes
   11. Cranial nerve palsy
   12. Headache
   13. Nystagmus
   14. Dysarthria
   15. Dysphagia
   16. Ataxia

B. Follow-up

C. Aneurysm clip [One of the following]
1. Stable with no change in neurologic findings
   a. Annual
2. New neurologic findings (See A above.)

X. Suspected acoustic neuroma (schwannoma) or cerebellar pontine angle tumor with both symptoms and neurological findings or a history of neurofibromatosis\textsuperscript{29,30} (MRI strongly preferred)
A. Symptoms [One of the following]
   1. Headache
   2. Disturbed balance or gait
   3. Tinnitus
B. Findings [One of the following]
   1. Asymmetric sensorineural hearing loss
   2. Facial weakness
   3. Altered sense of taste
C. Neurofibromatosis

XI. Hydrocephalus\textsuperscript{31} [One of the following]
A. Suspected obstructive hydrocephalus [Clinical findings and supportive history]
   1. Clinical findings [One of the following]
      a. Headache
      b. Papilledema
      c. Diplopia
      d. Mental status changes
      e. Gait disturbance or ataxia (People with ataxia experience a failure of muscle control in their arms and legs, resulting in a lack of balance and coordination or a disturbance of gait.)
      f. Seizure
   2. History of [One of the following]
      a. Arteriovenous malformation (AVM)
      b. Aneurysm
      c. Intraventricular or SAH
      d. Meningitis
      e. Known hydrocephalus
B. Normal pressure hydrocephalus (NPH) [One of the following]
   1. Apraxic gait (Apraxia is a motor disorder in which volitional or voluntary movement is impaired without muscle weakness.)
   2. Motor perseveration
   3. Urinary incontinence
   4. Dementia
   5. Known NPH with worsening symptoms
C. Suspicion of VP (ventriculoperitoneal) shunt malfunction

XII. Evaluation of tinnitus\textsuperscript{32-34} (ringing, hissing, buzzing, roaring, clicking or rough sounds heard by patient) (MRI is strongly preferred.)
XIII. **Arnold-Chiari malformation [One of the following]**
   A. Cranial nerve palsy
   B. Headache
   C. Incontinence
   D. Lumbar myelomeningocele
   E. Neck or back pain
   F. Sensory loss
   G. Syncope
   H. Tethered cord
   I. Unsteady gait
   J. Lower extremity spasticity
   K. Follow up known Chiari with new or changed symptoms

XIV. **Craniosynostosis**

XV. **Fibrous dysplasia**

XVI. **Macrocephaly**
   A. Head circumference greater than 2 standard deviations average for age

XVII. **Microcephaly**
   A. Head circumference smaller than 2 standard deviations average for age

XVIII. **Encephalocele**

XIX. **Cephalhematoma**

XX. **Proptosis (MRI brain and the orbits strongly preferred. CT of the orbits may be performed if MRI is not available or there is a contraindication to MRI. For thyroid eye disease, CT is preferred; see XXIX.)**
   A. Orbital asymmetry in a child with visual loss
   B. Adult with painful visual loss
   C. Hyperthyroidism with visual loss or visual compromise (Graves' disease)

XXI. **Visual field deficit**
   A. Bitemporal hemianopsia (loss of peripheral vision)
   B. Homonymous hemianopsia (loss of vision in the nasal half of one eye and the outer half of the other eye)
   C. Scotoma (loss of central vision)
   D. Heteronymous hemianopsia (loss of vision in either the nasal half or the outer half of both eyes)

XXII. **Hearing loss**
   A. Suspected cholesteatoma and audiogram demonstrating conductive hearing loss (CT of the petrous bone is preferred.) and one of the following
      1. Acute and intermittent vertigo
2. Painless otorrhea
3. Purulent drainage from the ear or mastoid area
4. Purulent drainage and granulation tissue in the ear

B. Conductive hearing loss
   1. Must have audiogram documenting conductive hearing loss

C. Total deafness
   1. Preoperative planning for cochlear implant (CT of the temporal bone is strongly preferred.)

D. Fluctuating hearing loss
   1. History of meningitis

E. Glomus tumor
   1. Reddish-blue mass in the ear

XXIII. Follow up subdural hematoma, epidural or subarachnoid hemorrhage\textsuperscript{36,37} [One of the following]
   A. Change in mental status
   B. New neurologic findings such as headache, vomiting, drowsiness, confusion, seizures and hemiparesis [One of the following]
      1. Papilledema
      2. Vomiting
      3. Personality changes
      4. Drowsiness
      5. Seizure
      6. Confusion
      7. Memory loss
      8. Gait disturbance
      9. Paralysis or weakness on one side of the body or face
      10. Visual changes
      11. Cranial nerve palsy
      12. Headache
      13. Nystagmus
      14. Dysarthria
      15. Dysphagia
      16. Ataxia
   C. New onset headache or changing headache
   D. Follow up within 36 hours of initial presentation if not performed previously
   E. Interval follow up with no change in clinical signs or symptoms

XXIV. Suspected intracranial hemorrhage [One of the following]
   A. Head trauma [One of the following]
      1. Amnesia
      2. Altered level of consciousness or loss of consciousness
      3. Vomiting
      4. Neurologic symptoms
      5. Headache
      6. Seizure
      7. Coagulopathy previously diagnosed (or current treatment with heparin or Coumadin\textsuperscript{®})
8. Skull fracture
9. Ataxia
10. Aphasia
11. Decreased sensation in a limb
12. Visual field loss
13. Double vision
14. Memory loss
15. Syncope

B. Suspicion of subarachnoid hemorrhage [One of the following]
1. Projectile vomiting
2. Thunderclap headache
3. Worst headache of one’s life
4. Headache and known aneurysm
5. Headache and first degree relative with aneurysm
6. Treated aneurysm and/or AVM with new headache or findings on neurologic examination
7. Stiff neck
8. Seizure
9. Third nerve palsy
10. Syncope

C. Intracerebral hemorrhage [One of the following]
1. Headache
2. Hypertension with headache
3. Known brain metastases with change in neurologic status
4. New onset of neurologic symptoms suggestive of a stroke [One of the following]
   a. Motor weakness affecting a limb, or one side of the face or body
   b. Decreased sensation affecting a limb, or one side of the face or body
   c. Acute ataxia (unsteady and clumsy motion of the limbs or trunk)
   d. Cognitive dysfunction
   e. Impaired vision, including amaurosis fugax, visual field loss and diplopia
   f. Aphasia (loss or impairment of the ability to produce or comprehend language due to brain damage)
   g. Dysarthria (speech disorder resulting from neurological injury)
   h. Dysphagia with no GI cause
   i. Vertigo with either headache or nystagmus
   j. Re-evaluation after documented stroke with change in neurological examination
   k. Numbness, tingling, paresthesias
   l. Syncope
5. Follow-up within 36 hours of initial presentation if not performed previously
6. Interval follow-up with no change in clinical signs or symptoms

XXV. Papilledema or other signs of increased intracerebral pressure (MRI is strongly preferred.)

XXVI. Acute, chronic or progressive mental status changes (MRI is strongly preferred.)
A. Deteriorating cognitive function [One of the following]
1. Progressive loss of memory
2. Confusion
3. Disorientation
4. Personality changes

XXVII. Evaluation of psychiatric disorders

XXVIII. Bell's palsy, with unusual presentation [One of the following] (MRI is strongly preferred.)

Bell's palsy is the sudden onset of temporary facial paralysis which is the result of an insult to the 7th cranial nerve or the facial nerve. It usually presents as unilateral paralysis of the face including the eyelid and decreased tearing.

A. No improvement in facial paresis after one month
B. Hearing loss
C. Multiple cranial nerve deficits
D. Weakness or sensory loss in an extremity
E. Bilateral symptoms

XXIX. Thyroid ophthalmopathy or thyroid eye disease and history of Graves' disease (CT is preferred) (This may be seen in hyperthyroid, hypothyroid or euthyroid individuals.)

References:

34. United Healthcare - Confidential and Proprietary.

Additional Medicare References:


42. Local Coverage Determination (LCD) for Computerized Tomography (CAT Scans) (L28544), Wisconsin Physicians Service Insurance Corporation, Kansas, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CovertageSelection=Both&NCSelection=NCD&PolicyType=Final&s=21&CntrctrType=1%7c9&KeyWord=70450&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHpcsCode=70450&kq=true&bc=IAAAAAAA&.

43. Local Coverage Determination (LCD) for Computerized Tomography (CAT Scans) (L28544), Wisconsin Physicians Service Insurance Corporation, Michigan, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CovertageSelection=Both&NCSelection=NCD&PolicyType=Final&s=27&CntrctrType=1%7c9&KeyWord=70450&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHpcsCode=70450&kq=true&bc=IAAAAAAA&.

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70450, 70460, 70470 CT of the Head or Brain

Clinical criteria reviewed/revised: 7/13/12, 7/5/12, 4/30/12, 8/5/11, 11/17/10, 5/26/10, 1/20/10, 12/09

Medical Advisory Committee reviewed and approved: 9/19/12, 4/4/12, 9/21/11
70480  CT Orbit, Sella, Posterior Fossa Outer, Middle or Inner Ear without Contrast
70481  CT Orbit, Sella, Posterior Fossa Outer, Middle or Inner Ear with Contrast
70482  CT Orbit, Sella, Posterior Fossa Outer, Middle or Inner Ear without and with Contrast

If there is an indication that MR is preferred or strongly preferred this indicates that CT is not the preferred choice or is a poor substitution. In those instances all efforts should be made to perform MRI as the best imaging test for the clinical indication.

VTI exam (studies performed to provide a virtual anatomy guide for use during surgery) are becoming increasingly more common\(^1\)\(^2\)

I. **Head and neck cancer**\(^3\)\(^-\)\(^9\) (MRI is strongly preferred for staging of oropharyngeal and oral tumors. MRI should be used to evaluate extension to skull base, orbit, cervical spine or neurovascular structures.)

   Includes but not limited to any of the following malignancies
   - Cancer of the arytenoid cartilage
   - Cancer of the epiglottis
   - Cancer of the hard palate
   - Cancer of the infraglottic region
   - Cancer of the larynx
   - Cancer of the oral cavity
   - Cancer of the paranasal sinuses
   - Cancer of the pharynx
   - Cancer of the salivary gland(s)
   - Cancer of the soft palate
   - Cancer of the supraglottic region
   - Cancer of the tongue
   - Cancer of the tonsils
   - Cancer of the vocal cord(s)

   Thyroid and parathyroid cancers do not fall into this category [One of the following]

   A. Initial staging of new diagnosis of head and neck cancer confirmed by biopsy (for initial staging MRI as well as PET/CT may be needed)
   B. Following chemoradiation or radiation to the neck 4-8 weeks after completion of therapy if there is persistent disease or suspected progression
   C. Following chemoradiation or radiation to the neck 6 weeks after completion of treatment if there is a clinical response (PET/CT is preferred but must wait at least 12 weeks)
   D. If no chemoradiation then follow up within 6 months of completion of treatment
E. Deteriorating clinical condition with known head and neck cancer such as but not limited to new neck mass including new nodes, new hoarseness, weight loss, bleeding, dysphagia
F. New evidence of cranial nerve involvement

II. Suspected orbital tumor or other pathology [One of the following]\(^{10-13}\)
   A. Unilateral exophthalmos or enophthalmos or
   B. Orbital or periorbital mass or vascular malformation
   C. Vision loss documented by physical examination
   D. Thyroid eye disease (including myopathy) (MRI is strongly preferred)
      1. Bilateral proptosis
      2. Vision loss

III. Optic neuritis (MRI with gadolinium strongly preferred CT should not be used unless MRI is contraindicated) [One of the following]\(^{14-17}\)
   A. Eye pain worsening with movement of the eye
   B. Visual field deficit which is mostly central (scotoma)
   C. Visual loss in one eye
      1. Known MS
   D. Examination of the eye [All]
      1. Swelling of the optic disc and
      2. Blurring of disc margins and
      3. Distended veins
   E. Suspicion of multiple sclerosis [One of the following]
      1. Pain on eye movement or tenderness of globe
      2. Impaired color perception
      3. Unilateral rapid visual loss
      4. Visual loss Improves spontaneously
   F. Post radiation neuritis, visual loss months or years after radiation therapy to area

IV. Bell's Palsy, with unusual presentation\(^{18-21}\) [One of the following] [MRI strongly preferred]
Bell's palsy is the sudden onset of temporary facial paralysis which is the result of an insult to the 7th cranial nerve or the facial nerve. It usually presents as unilateral paralysis of the face including the eyelid and decreased tearing.
   A. Slow onset
   B. Bilateral
   C. Extended duration, no indication of recovery after 6-8 weeks

V. Evaluation of tinnitus,\(^{22-24}\) (ringing, hissing, buzzing, roaring, clicking or rough sounds heard by patient) [MRI is strongly preferred]

VI. Evaluation of vertigo [MRI brain preferred] [One of the following]\(^{25,26}\)
   A. Progressive unilateral hearing loss
   B. Nystagmus
   C. Pain in ear or mastoid area, headache
   D. Nausea or vomiting
E. Signs suggesting cerebrovascular or demyelinating disease [[One of the following]
   1. Weakness
   2. Paresthesia
   3. Other changes in sensory and motor function
   4. Altered level of consciousness
   5. Changes in vision
   6. Ataxia or dysarthria

VII. Evaluation of congenital anomalies of the ear

VIII. Suspected cholesteatoma and an audiogram demonstrating conductive hearing loss

IX. Trauma [One of the following]

X. Evaluation of severe infections of the ear (malignant otitis externa)

XI. Cochlear implant evaluation

XII. Congenital hearing loss

XIII. Visual field loss or vision loss [One of the following]

XIV. Congenital anomaly of the orbit

XV. Otosclerosis

XVI. Suspected pituitary disease (micro-adenoma, macro-adenoma) (MRI of the brain with gadolinium is strongly preferred CT should not be performed for this indication unless MRI is contraindicated) [One of the following]

    A. Elevated pituitary hormones including precocious puberty [One of the following]
1. Prolactin (PRL) >20 ng/mL [g/L]
2. Growth Hormone (GH) >5 ng/mL [g/L]
3. Thyroid Stimulating Hormone (TSH) >4U/mL [mIU/L]
4. Follicular Stimulating Hormone (FSH) or
   a. Male: >10 mIU/mL
   b. Female: (mIU/mL)
      i. Follicular phase >13
      ii. Luteal phase >13
      iii. Midcycle >22
      iv. Postmenopausal > 150
5. Luteinizing Hormone (LH)
   a. Male: >8 mIU/mL
   b. Female: (mIU/mL)
      i. Follicular phase >12
      ii. Luteal phase >15
      iii. Midcycle peak >77
      iv. Postmenopausal >40
6. Adrenocorticotropic Hormone (ACTH) >46 pg/mL

B. Hypopituitarism including hypogonadism [One of the following]
   1. Pituitary apoplexy [One of the following]
      a. Acute headache with vomiting or
      b. Ophthalmoplegia
      c. Amaurosis
      d. Depressed level of consciousness
      e. Bitemporal hemianopsia
   2. Acquired hypopituitarism [One of the following]
      a. Cranial irradiation
      b. Brain surgery
      c. Head trauma
      d. Empty sella
      e. Hemochromatosis
      f. Prior brain infection
      g. Known pituitary tumor
      h. Langerhans cell histiocytosis of the pituitary
   3. Gonadotropin deficiency or hypogonadism [One of the following]
      a. Male [history or clinical findings and laboratory tests]
         i. History [One of the following]
            01. Loss of libido
            02. Impotence
            03. History of undescended testicle or cryptorchism
            04. History of testicular failure
            05. History of chemotherapy or radiation therapy
            06. Visual field disorder
            07. Decreased body hair
            08. Galactorrhea
            09. Gynecomastia
         ii. Laboratory tests
01. Normal to low normal free testosterone, LH and FSH
   iii. Female [All]
      01. Oligomenorrhea or amenorrhea
      02. Low normal LH, FSH
4. TSH deficiency with TSH < .4
5. ACTH deficiency
6. Growth hormone deficiency [One of the following]
a. Adults [One of the following]
   i. History of radiation or surgery to the pituitary or hypothalamic region
   ii. Decreased levels of 3 or more pituitary hormones (TSH, LH, FSH, ACTH, GHRH, ADH)
   iii. Decreased levels of IGF-I (Insulin-like growth factor I) based on laboratory normal range
   iv. Insulin tolerance test (contraindicated in individuals with history of seizures or coronary artery disease)
      01. Growth hormone response < 5 micrograms/L
   v. Arginine stimulating test
      01. Growth hormone response < 5 micrograms/L
b. Children with no evidence of malignancy, Crohn’s disease, renal disease, hypothyroidism or Turner’s syndrome and one of the following
   i. Bone age more than 2 standard deviations below the mean for age
   ii. History of surgery or radiation in the pituitary or hypothalamus regions
   iii. Growth hormone levels below normal (<10 micrograms/L)
   iv. History of intrauterine growth retardation
   v. Prader-Willi syndrome
   vi. Children over the age of 1
      01. Insulin tolerance test positive with GH response < 10 micrograms/L
   vii. Neonate random growth hormone level < 20 micrograms/L
7. Visual problems [One of the following]
a. Bitemporal visual field loss - loss of peripheral vision bilaterally
b. Optic atrophy
c. Drooping eyelid
8. Diabetes insipidus

XVII. **Proptosis** (or exophthalmos) (MRI is preferred) [One of the following]
   A. Orbital asymmetry in a child with visual loss
   B. Adult with painful visual loss

XVIII. **Conductive hearing loss**
   A. Documented by audiometry

XIX. **Hearing loss** [One of the following]
   A. Suspected cholesteotoma with audiogram demonstrating conductive hearing loss and one of the following
      1. Acute and intermittent vertigo
      2. Painless otorrhea
3. Purulent drainage from the ear or mastoid area
4. Purulent drainage and granulation tissue in the ear

B. Conductive hearing loss
1. Must have audiogram documenting conductive hearing loss

C. Total deafness
1. Preoperative planning for cochlear implant

D. Fluctuating hearing loss
1. History of meningitis
2. Glomus tumor
   - Reddish blue mass in the ear

References:


37. Local Coverage Determination (LCD) for Computerized Tomography (CAT Scans) (L28544), Wisconsin Physicians Service Insurance Corporation, Minnesota, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=28&CntnrCtType=1%7c9&KeyWord=70480&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=70480&kq=true&bc=IAAAAAAAAAAA&.

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43. Local Coverage Determination (LCD) for Computerized Tomography (CAT Scans) (L28544), Wisconsin Physicians Service Insurance Corporation, Iowa, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=17&CntnrCtType=1%7c9&KeyWord=70480&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=70480&kq=true&bc=IAAAAAAAAAAA&.

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The correlation between sinus findings on imaging and pain is poor or absent. Sinus imaging should be reserved for “delineating the anatomy and degree of sinus disease before surgical Intervention.”

This is especially true of pediatric patients almost all of whom will show MR evidence of sinus mucosal thickening when rhinitis is the only pathology. Even asymptomatic children examined by CT for other reasons had opacified or unidentifiable maxillary antra 72% of the time under age 1 year, and 18% if over one year of age.

If there is an indication that MR is preferred or strongly preferred this indicates that CT is not the preferred choice or is a poor substitution. In those instances all efforts should be made to perform MRI as the best imaging test for the clinical indication.

I. **Acute complicated rhinosinusitis with headache or facial pain or swelling or orbital pain or purulent nasal discharge and one of the following**¹⁻⁶
   A. Findings [One of the following]
      1. Orbital cellulitis
      2. Facial cellulitis
      3. Suspicion of intracranial infection or meningitis
         a. Mental status changes
         b. Focal neurologic findings
      4. Proptosis
      5. Visual disturbance
      6. Focal neurologic findings
   B. Comorbidities such as one of the following
      1. Diabetes
      2. Immunocompromised state
      3. Past history of facial trauma or surgery
   C. No response to medical management for 2 weeks with no change in signs or symptoms followed by treatment with an alternative antibiotic for 2 weeks of one of the following
      1. Amoxicillin unless contraindicated
      2. Penicillin allergic
         a. Bactrim
         b. Erythromycin
         c. Zithromax
         d. Azithromycin
e. Clarithromycin

D. Progression of symptoms under medical management

II. Recurrent acute rhinosinusitis with 3 or more episodes within 1 year and one of the following¹,³.
   A. Symptoms
      1. Upper respiratory symptoms for more than a week
      2. Colored nasal discharge
      3. Poor response to decongestant
      4. Facial or sinus pain
      5. Nasal obstruction

III. Chronic rhinosinusitis- symptoms lasting 8 weeks or longer of varying intensity and not responding to antibiotics taken for at least 7 days and one of the following³
   A. Symptoms [One of the following]
      1. Purulent nasal discharge
      2. Facial pain/pressure
      3. Nasal obstruction
      4. Decreased sense of smell
   B. Findings on physical examination [One of the following]
      1. Nasal polyps
      2. Septal deviation

IV. Suspected sinus or nasopharyngeal tumor [One of the following]⁴⁻⁷
   This may include but is not limited to the following:
   Inverting papilloma
   Olfactory neuroblastoma (esthesioneuroblastoma)
   Juvenile angiofibroma
   Squamous cell carcinoma
   Adenocarcinoma
   Adenoid cystic carcinoma
   Odontogenic keratocyst
   A. Positive nasal endoscopy
   B. Clinical findings [One of the following]
      1. Nasal obstruction
      2. Posterior (Level V) neck mass
      3. Epistaxis
      4. Headache
      5. Serous otitis media with hearing loss, and otalgia
      6. Cranial nerve involvement (is indicative of skull base extension and advanced disease)
      7. Facial or dental pain without obvious cause
      8. Destroyed bone by x-ray
   C. Anosmia or dysosmia > 2 weeks
   D. Recurrent unilateral otitis media or recurrent sinusitis after appropriate antibiotic therapy
   E. Ebstein-Barr Virus (EBV) infection with positive titers
F. Documented history of inverting papilloma
G. Interval follows up of documented sinus or nasopharyngeal tumor

V. **Salivary gland pathology** \(^{7,8}\) (MRI is strongly preferred for all indications except stones) [For proven cancer of the salivary gland see VII below] [One of the following]
   A. Mass suspected by physical examination or US and MRI cannot be performed
   B. Suspected submandibular or parotid duct stone and non diagnostic ultrasound [One of the following]
      1. Acutely swollen and painful gland
      2. Recurrent infections
      3. Indeterminate calcifications on x-ray
   C. Follow up of known salivary gland tumor
      1. See VII below

VI. **Mucocle or nasal polyp(s)** \(^{6}\) [One of the following] (For cancer of the nose see VII below)
   A. Mucocle suspected physical findings [One of the following]
      1. Proptosis
      2. Exophthalmos
      3. Loss of vision
      4. Swelling over the sinus
   B. Follow-up of known mucocle or polyp(s)
   C. Nasal polyps [One of the following]
      1. Anterior rhinoscopy demonstrating polyp(s)
      2. History of cystic fibrosis
      3. Inability to smell (anosmia)
      4. Nasal obstruction

VII. **Head and neck cancer** \(^{7}\) [One of the following] (MRI is strongly preferred for staging of oropharyngeal and oral tumors. MRI should be used to evaluate extension to skull base, orbit, cervical spine or neurovascular structures.)

This includes but is not limited to cancer of:
   - Cancer of the arytenoid cartilage
   - Cancer of the epiglottis
   - Cancer of the hard palate
   - Cancer of the infraglottic region
   - Cancer of the larynx
   - Cancer of the oral cavity
   - Cancer of the paranasal sinuses
   - Cancer of the pharynx
   - Cancer of the salivary gland(s)
   - Cancer of the soft palate
   - Cancer of the supraglottic region
   - Cancer of the tongue
   - Cancer of the tonsils
Cancer of the vocal cord(s)
Thyroid and parathyroid cancers do not fall into this category [One of the following]

A. Initial staging of new diagnosis of head and neck cancer confirmed by biopsy (for initial staging CT as well as PET/CT may be needed)
B. Deteriorating clinical condition with known head and neck cancer such as but not limited to new neck mass including new nodes, new hoarseness, weight loss, bleeding, dysphagia
C. New evidence of cranial nerve involvement
D. If no chemoradiation or radiation treatment follow up usually within 6 months of completion of treatment
E. Following chemoradiation or radiation to the neck 4-8 weeks after completion of therapy if there is persistent disease or suspected progression
F. Following chemoradiation or radiation to the neck 6 weeks after completion of treatment if there is a clinical response (PET/CT is preferred but must wait at least 12 weeks)

VIII. Trauma [One of the following]
A. Facial subcutaneous air after injury
B. CSF rhinorrhea (clear fluid drainage from nose)
C. Clinical evidence of facial distortion after injury
D. Diplopia

IX. Cough, work up of chronic and a chest x-ray demonstrating no cause for the cough or treatment of the findings on the chest x-ray failed to relieve the cough (cough lasting more than 3 weeks and all of the following)9,10
A. [skip section if there is no history of smoking or ACE inhibitor use]
   1. Patient smoked no response to cessation
   2. Patient used ACE Inhibitors no response to discontinued use
B. No response to empiric treatment of [All]
   1. Upper airway cough syndrome (UACS preferred terminology; old terminology was post nasal drip) no response to > 1 week of first generation antihistamines and decongestants
   2. GERD [One of the following]
      a. No response to anti-reflux medication
      b. Negative 24 hour esophageal pH monitoring
   3. Asthma, no response to bronchodilators
References:


Additional Medicare References

11. Local Coverage Determination (LCD) for Computerized Tomography (CAT Scans) (L28544), Wisconsin Physicians Service Insurance Corporation, Minnesota, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=28&CntrctrType=1|9&KeyWord=70486&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=70486&kq=true&bc=IAAAAAAAAAA.

12. Local Coverage Determination (LCD) for Computerized Tomography (CAT Scans) (L28544), Wisconsin Physicians Service Insurance Corporation, Wisconsin, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=57&CntrctrType=1|9&KeyWord=70486&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=70486&kq=true&bc=IAAAAAAAAAA.


14. Local Coverage Determination (LCD) for Computerized Tomography (CAT Scans) (L28544), Wisconsin Physicians Service Insurance Corporation, Nebraska, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=36&CntrctrType=1|9&KeyWord=70486&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=70486&kq=true&bc=IAAAAAAAAAA.

15. Local Coverage Determination (LCD) for Computerized Tomography (CAT Scans) (L28544), Wisconsin Physicians Service Insurance Corporation, Missouri, http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=29&CntrctrType=1|9&KeyWord=70486&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=70486&kq=true&bc=IAAAAAAAAAA.

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17. Local Coverage Determination (LCD) for Computerized Tomography (CAT Scans) (L28544), Wisconsin Physicians Service Insurance Corporation, Iowa, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=17&CntrctrType=1|9&KeyWord=70486&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=70486&kq=true&bc=IAAAAAAAAAA.


70486, 70487, 70488 CT Maxillofacial Area

7/16/12, 2/10/12, 8/10/11, 11/17/10, 1/20/10
Medical Advisory Committee reviewed and approved: 9/19/12, 4/4/12, 9/21/11
70490  CT Soft Tissue Neck without Contrast
70491  CT Soft Tissue Neck with Contrast
70492  CT Soft Tissue Neck without and with Contrast

If there is an indication that MR is preferred or strongly preferred this indicates that CT is not the preferred choice or is a poor substitution. In those instances all efforts should be made to perform MRI as the best imaging test for the clinical indication.

I.  Salivary gland pathology\(^1,2\) (MRI is strongly preferred for all indications except stones) (For cancer of the salivary gland see V below) [One of the following]
   A.  Mass suspected by physical examination or US and MRI cannot be performed
   B.  Suspected submandibular or parotid duct stone and ultrasound non diagnostic [One of the following]
      1.  Acutely swollen and painful gland
      2.  Recurrent infections
      3.  Indeterminate calcifications on x-ray
   C.  Follow up of known salivary gland tumor
      1.  See V below

II.  Parathyroid pathology\(^3,5\) [One of the following] (nuclear parathyroid scan is preferred)
   A.  Hyperparathyroidism [One of the following]
      1.  Ca > normal \(> 10.6 \text{ mg/dL or } 2.7 \text{ mmol/L}\)
      2.  PTH > normal \(> 55 \text{ pg/mL or } 5.8 \text{ pmol/L}\)
   B.  Biopsy proven malignancy
      1.  Initial staging

III.  Neck mass other than thyroid\(^7,8\) [One of the following]
   A.  Progressive growth
   B.  Inflammatory mass not responding to antibiotic therapy for 4-6 weeks
   C.  Recurrence or new mass detected by physical examination
   D.  Children: any mass detected by physical examination or other imaging
   E.  Fine needle aspiration consistent with metastatic disease (carcinoma, sarcoma) or lymphoma
   F.  Suspected congenital neck mass [One of the following]
      1.  Thyroglossal duct cyst [both]
         a.  Midline or slightly off midline mass in the anterior triangle and
         b.  Ultrasound not diagnostic
      2.  Brachial cleft cyst
      3.  Lymphangioma
      4.  Thymic cyst
   G.  Neck abscess with pain and swelling and one of the following
1. Aural temperature > 38.3°C or 100.9°F
2. Leukocytosis, WBC >11,500/cu.mm

IV. Suspected nasopharyngeal tumor⁸-¹¹ [One of the following] (For known cancers see V below)
   A. Symptoms [One of the following]
      1. Epistaxis
      2. Sore throat or hoarseness
      3. Ear pain
   B. Clinical findings [One of the following]
      1. Nasal obstruction
      2. Positive endoscopy
      3. Serous otitis media with hearing loss and otalgia
      4. Epstein-Barr Virus (EBV) infection with positive titers
      5. Posterior (level V) neck node or mass
      6. Cranial nerve involvement (is indicative of skull base involvement and advanced disease)

V. Head and neck cancer⁸-¹³ (MRI is strongly preferred for staging of oropharyngeal and oral tumors. MRI should be used to evaluate extension to skull base, orbit, cervical spine or neurovascular structures) [One of the following]
   Includes but not limited to;
   Cancer of the arytenoid cartilage
   Cancer of the epiglottis
   Cancer of the hard palate
   Cancer of the infraglottic region
   Cancer of the larynx
   Cancer of the oral cavity
   Cancer of the paranasal sinuses
   Cancer of the pharynx
   Cancer of the salivary gland(s)
   Cancer of the soft palate
   Cancer of the supraglottic region
   Cancer of the tongue
   Cancer of the tonsils
   Cancer of the vocal cord(s)

Thyroid and parathyroid cancers do not fall into this category [One of the following]

A. Initial staging of new diagnosis of head and neck cancer confirmed by biopsy (for initial staging CT as well as PET/CT may be needed)
B. Deteriorating clinical condition with known head and neck cancer such as but not limited to new neck mass including new nodes, new hoarseness, weight loss, bleeding, dysphagia
C. New evidence of cranial nerve involvement
D. If no chemoradiation or radiation treatment follow up usually within 6 months of completion of treatment
E. Following chemoradiation or radiation to the neck 4-8 weeks after completion of therapy if there is persistent disease or suspected progression
F. Following chemoradiation or radiation to the neck 6 weeks after completion of treatment if there is a clinical response (PET/CT is preferred but must wait at least 12 weeks)

VI. Neck abscess with pain and swelling and one of the following
   A. Aural temperature > 38.3°C or 100.9°F
   B. Leukocytosis, WBC >11,500/cu.mm

VII. Vocal cord paralysis or hoarseness13,14 [One of the following] (Imaging should not be performed prior to laryngoscopy) [For follow up of cancer see V above]
   A. Unexplained vocal cord paralysis found on laryngoscopy
   B. Mass or lesion on the vocal cord found on laryngoscopy
   C. Injury to the recurrent laryngeal nerve and one of the following
      1. Prior cervical spine surgery
      2. Prior thyroid surgery
      3. Prior esophageal cancer surgery
      4. Prior carotid endarterectomy
      5. Left hilar lung mass
      6. Left pneumonectomy

VIII. Airway compromise by neck mass with evidence of upper airway obstruction and either a known neck mass or an enlarged thyroid

IX. Suspected laryngeal fracture with a history of neck trauma and one of the following15
   A. Subcutaneous emphysema or crepitus
   B. Dysphonia
   C. Loss of the laryngeal prominence (Adam's apple)
   D. Dysphagia
   E. Odynophagia
   F. Stridor
   G. Hemoptysis
   H. Cough
   I. Pain over the larynx

X. Thyroid mass with an ultrasound that does not demonstrate the complete size or substernal extent of the gland and an enlarged thyroid on a nuclear scan

XI. Lymphoma16,17 [One of the following]
   A. Initial staging for biopsy proven lymphoma- in addition PET/CT
   B. New or changing cervical adenopathy with known lymphoma
   C. During treatment may monitor response to chemotherapy with CT or PET/CT
   D. Follow up shortly after completion of therapy [PET or PET/CT is preferred]
E. Surveillance in asymptomatic individual with no known metastatic disease and no symptoms or signs of relapse with negative PET or PET/CT after completion of treatment

1. Hodgkin’s disease
   a. Asymptomatic with no signs or symptoms of disease
      i. If the neck was involved with disease every 6-12 months for the first 2-3 years

2. Follicular, Malt, Nodal marginal cell, Mantle cell Lymphoma, Burkitt’s Lymphoma
   a. Asymptomatic with no signs or symptoms of disease
      i. Every 6 months for 2 years
      ii. Annually after 2 years

3. Diffuse Large B Cell Lymphoma, Peripheral T cell lymphoma
   a. 6 months after completion of treatment
   b. 12 months after completion of treatment

F. 24 months after completion of treatment CLL and SLL (small lymphocytic lymphoma)

1. CT before initiation of therapy when there is pathologically proven diagnosis of CLL or SLL

References:

18. Local Coverage Determination (LCD) for Computerized Tomography (CAT Scans) (L28544), Wisconsin Physicians Service Insurance Corporation, Minnesota, accessed at [http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSSelection=NCD&PolicyType=Final&s=28&CntrctrType=1%7c9&KeyWord=70490&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=70490&qk=true&bc=AAAAAAAAAAAA&].
19. Local Coverage Determination (LCD) for Computerized Tomography (CAT Scans) (L28544), Wisconsin Physicians Service Insurance Corporation, Wisconsin, accessed at [http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSSelection=NCD&PolicyType=Final&s=57&CntrctrType=1%7c9&KeyWord=70490&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=70490&qk=true&bc=AAAAAAAAAAAA&].
20. Local Coverage Determination (LCD) for Computerized Tomography (CAT Scans) (L28544), Wisconsin Physicians Service Insurance Corporation, Michigan, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=27&CntnrtrType=1%7c9&KeyWord=70490&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHpcsCode=70490&kq=true&bc=IAAAAAAAAAAA&.

21. Local Coverage Determination (LCD) for Computerized Tomography (CAT Scans) (L28544), Wisconsin Physicians Service Insurance Corporation, Nebraska, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=36&CntnrtrType=1%7c9&KeyWord=70490&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHpcsCode=70490&kq=true&bc=IAAAAAAAAAAA&.

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23. Local Coverage Determination (LCD) for Computerized Tomography (CAT Scans) (L28544), Wisconsin Physicians Service Insurance Corporation, Kansas, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=21&CntnrtrType=1%7c9&KeyWord=70490&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHpcsCode=70490&kq=true&bc=IAAAAAAAAAAA&.

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70490, 70491, 70492 CT Soft Tissue Neck

Clinical criteria reviewed/revised: 7/6/12, 3/29/12, 9/27/11, 11/17/10, 11/18/09

Medical Advisory Committee reviewed and approved: 9/19/12, 4/4/12, 9/21/11
70496  CTA of the Head

I.  Subarachnoid hemorrhage (SAH)\textsuperscript{1-3} [One of the following]
   A.  Subarachnoid hemorrhage by lumbar puncture
   B.  Proven subarachnoid hemorrhage with negative angiogram requiring follow up imaging

II. Proven intracerebral bleed\textsuperscript{1} (hemorrhage or hematoma)
    A.  CT or MRI positive for intracerebral bleed or hemorrhage or hematoma

III. Recent stroke by history\textsuperscript{1,4}

IV. Cerebral aneurysm\textsuperscript{1,5-8}
    A.  Screening study for cerebral aneurysm [One of the following]
       1.  First degree relative with history of cerebral aneurysm
       2.  Two or more relatives with a history of SAH
       3.  Polycystic kidney disease
       4.  Multiple meningiomas
       5.  Type IV Ehlers Danlos syndrome
    B.  Suspected cerebral aneurysm [One of the following]
       1.  SAH or intracerebral hematoma on prior imaging
       2.  Isolated cranial nerve (CN) deficit
    C.  Known cerebral aneurysm documented by CTA, MRA or angiography [One of the following]
       1.  Follow-up after Intervention (embolization or surgery)
          a.  Shortly after an interventional procedure (i.e. surgery or embolization)
          b.  Every 6 months after embolization
       2.  New or worsening clinical findings [One of the following]
          a.  Papilledema
          b.  Vomiting
          c.  Personality changes
          d.  Drowsiness
          e.  Seizure
          f.  Confusion
          g.  Memory loss
          h.  Gait disturbance
          i.  Paralysis or weakness on half of the body or face
          j.  Visual changes
          k.  Cranial nerve palsy
          l.  Headache
          m.  Nystagmus
          n.  Dysarthria
          o.  Dysphagia
          p.  Ataxia
       3.  Interval evaluation for stability in an asymptomatic individual
a. Aneurysm 5mm or less annually for up to 5 years and then every other year or
b. Aneurysm more than 5 mm every 6 months for up to 5 years and then annually

D. Neurofibromatosis
E. Visual field loss
F. Thunderclap headache
G. Exertional headache
H. Preoperative planning for cerebral aneurysm management (surgical or interventional)

V. Pre-operative study, carotid endarterectomy planned² [One of the following]
A. Asymptomatic patient with carotid stenosis of 60% or more by carotid duplex US
B. Symptomatic carotid stenosis with carotid duplex US showing 60% stenosis or
C. Carotid duplex US showing ulcerated plaque

VI. Abrupt onset of a neurologic deficit- including stroke and TIA¹⁴ [One of the following]
A. Motor weakness affecting a limb, or one side of the face or body
B. Decreased sensation affecting a limb, or one side of the face or body
C. Acute ataxia (unsteady and clumsy motion of the limbs or trunk)
D. Mental confusion including memory loss and disorientation
E. Impaired vision, including amaurosis fugax, visual field loss and diplopia
F. Aphasia (loss or impairment of the ability to produce or comprehend language due to brain damage)
G. Dysarthria (speech disorder resulting from neurological injury)
H. Dysphagia with no GI cause
I. Vertigo with either headache or nystagmus
J. Numbness, tingling, paresthesias
K. Syncope
L. Decreased level of consciousness
M. Papilledema
N. Stiff neck
O. Drowsiness
P. New onset of vomiting
Q. Nystagmus
R. Cranial nerve palsy
S. Gait disturbance
T. Personality or behavioral changes
U. New seizure
V. Hearing loss or new onset tinnitus

VII. AVM (arteriovenous malformation)⁹ [One of the following]
A. Known AVM documented by CTA, MRA, MRI, catheter angiogram [One of the following
   1. Immediate follow-up after a therapeutic procedure (i.e. surgery, embolization, radiosurgery)
   2. Routine follow up after a therapeutic procedure
   3. New or worsening clinical findings
      a. Papilledema

b. Vomiting
c. Personality changes
d. Drowsiness
e. Seizure
f. Confusion
g. Memory loss
h. Gait disturbance
i. Paralysis or weakness on half of the body or face
j. Visual changes
k. Cranial nerve palsy
l. Headache
m. Nystagmus
n. Dysarthria
o. Dysphagia
p. Ataxia

4. Planning of intervention (surgical or interventional)

B. Suspected AVM [One of the following]
   1. Severe unexplained headache (thunderclap headache)
   2. Altered level of consciousness
   3. Focal neurologic findings
      a. Papilledema
      b. Vomiting
      c. Personality changes
d. Drowsiness
e. Seizure
f. Confusion
g. Memory loss
h. Gait disturbance
i. Paralysis or weakness on half of the body or face
j. Visual changes
k. Cranial nerve palsy
l. Headache
m. Nystagmus
n. Dysarthria
o. Dysphagia
p. Ataxia

4. Subarachnoid hemorrhage on recent CT or MRI of the brain
5. Subarachnoid hemorrhage on lumbar puncture
6. Intracerebral bleed or hematoma, or hemorrhage on prior CT or MRI of the brain

VIII. Suspected cerebral venous thrombosis\textsuperscript{10-12} [Both symptoms and risk factors]
(MRA is preferred.)
A. Symptoms [One of the following]
   1. Papilledema
   2. Headaches
   3. Mental status changes
4. Vomiting
5. Changes in vision
6. Seizures
7. Lethargy or coma
8. Alternating focal neurological deficits
9. Hemiparesis or paraparesis

B. Risk factors [One of the following]
1. Postpartum or
2. Post-operative status
3. Skull fracture over dural sinus
4. Calvarial mass
5. Meningitis, sinusitis or middle ear infections
6. Hypercoagulable state [One of the following]
   a. Personal history of cancer
   b. Factor V Leiden mutation
   c. MTHFR
   d. SLE
   e. Sickle cell disease
   f. Contraceptive medications
   g. Protein C deficiency
   h. Protein S deficiency
   i. Antiphospholipid antibodies
   j. Elevated lipoprotein (a)
   k. Elevated platelet count
   l. Prothrombin 20210 gene mutation
   m. Antithrombin III deficiency
7. Ear infection
8. Brain tumor by history

IX. Evaluation of tinnitus\textsuperscript{13} (ringing, hissing, buzzing, roaring, clicking or rough sounds heard by patient)

X. Vasculitis\textsuperscript{14-17} [Both]
A. Clinical presentation [One of the following]
   1. Headache
   2. Seizures
   3. Focal neurologic deficit
   4. Altered level of consciousness
   5. Altered mood or personality
6. Autoimmune disease such as but not limited to [One of the following]
   a. Systemic Lupus Erythematosus (SLE)
   b. Polyarteritis Nodosa
   c. Giant cell arteritis
   d. Sjögren’s syndrome
   e. Behçet’s syndrome
   f. Dermatomyositis
B. Laboratory tests [One of the following]
   1. ESR >20 mm/hr
   2. C-reactive protein >10 mg/L
   3. ANA positive
   4. Anticardiolipin antibodies positive

References:


Additional Medicare References:

18. Local Coverage Determination (LCD) for Computerized Tomography (CAT Scans) (L28544), Wisconsin Physicians Service Insurance Corporation, Iowa, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=17&CntrctrType=1%7c9&KeyWord=70496&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=70496&kq=true&bc=IAAAAAAAAE&.
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70496 CTA of the Head

Clinical criteria reviewed/revised: 7/13/12, 2/20/12, 8/22/11, 11/17/10, 5/26/10, 9/16/09

Medical Advisory Committee reviewed and approved: 9/19/12, 4/4/12, 9/21/11
70498  CTA of the Carotid and Vertebral Arteries

I.  Suspected carotid stenosis\(^1\)-\(^5\) [One of the following]
   A.  TIA or stroke (See II below)
   B.  Findings on carotid duplex examination [One of the following]
       1.  60% stenosis or more or
       2.  Carotid duplex US showing ulcerated plaque or
       3.  Carotid occlusion or
       4.  Technically inadequate/equivocal carotid Doppler or
   C.  Asymptomatic carotid bruit and inadequate carotid duplex ultrasound
   D.  Carotid endarterectomy planned
       1.  Duplex carotid ultrasound demonstrating [One of the following]
           a.  Stenosis of 60% or more or
           b.  Ulcerated plaque on carotid duplex

II.  Abrupt onset of a neurologic deficit- including stroke and TIA\(^1\) [One of the following]
   A.  Motor weakness affecting a limb, or one side of the face or body or
   B.  Decreased sensation affecting a limb, or one side of the face or body or
   C.  Acute ataxia (unsteady and clumsy motion of the limbs or trunk) or
   D.  Mental confusion including memory loss and disorientation or
   E.  Impaired vision, including amaurosis fugax, visual field loss and diplopia or
   F.  Aphasia (loss or impairment of the ability to produce or comprehend language due to brain damage) or
   G.  Dysarthria (speech disorder resulting from neurological injury) or
   H.  Dysphagia with no GI cause or
   I.  Vertigo with either headache or nystagmus or
   J.  Numbness, tingling, paresthesias or
   K.  Syncope or
   L.  Decreased level of consciousness or
   M.  Papilledema or
   N.  Stiff neck or
   O.  Drowsiness or
   P.  New onset of vomiting or
   Q.  Nystagmus or
   R.  Cranial nerve palsy or
   S.  Gait disturbance or
   T.  Personality or behavioral changes or
   U.  New seizure or
   V.  Hearing loss or new onset tinnitus

III.  Suspected traumatic or spontaneous carotid dissection [One of the following]\(^6\)-\(^10\)
A. Neck pain or
B. Unilateral facial or orbital pain or
C. Unilateral headaches or
D. Horner’s syndrome, miosis and ptosis (contraction of the iris, drooping eyelid) or
E. Transient ischemic attacks (TIA see II above) or
F. Cranial nerve palsy or
G. New onset of stroke or
H. Minor neck trauma

IV. Carotid body tumor\textsuperscript{11-13} [Both]
A. Carotid ultrasound demonstrating a solid mass at the carotid bifurcation and
B. Preoperative surgical planning

V. Pre-operative evaluation of neck tumor for vascular invasion
A. CT or MRI of the neck demonstrating a mass close to the carotid artery

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### 70498 CT of the Carotid and Vertebral Arteries

Clinical criteria reviewed/revised: 7/6/12, 2/21/12, 8/22/11, 11/17/10, 9/19/09

Medical Advisory Committee reviewed and approved: 9/19/12, 4/4/12, 9/21/11
If there is an indication that MR is preferred or strongly preferred this indicates that CT is not the preferred choice or is a poor substitution. In those instances all efforts should be made to perform MRI as the best imaging test for the clinical indication.

I. **Salivary gland pathology**\(^1,2\) (MRI is strongly preferred for all indications except stones. For cancer of the salivary gland see V below) [One of the following]
   A. Suspected submandibular or parotid duct stone with non diagnostic ultrasound or CT
      [Ultrasound or CT is the study of choice]
   B. Follow up of known salivary gland tumor
      1. See VI below
   C. Follow up after surgery and/or radiation therapy
   D. Lateral facial swelling
   E. Surveillance after treatment

II. **Parathyroid pathology**\(^3,5\) [One of the following]
   A. Hyperparathyroidism [One of the following]
      1. Ca >normal [>10.6 mg/dL or 2.7 mmol/L]
      2. PTH ≥normal [>55 pg/mL or 5.8 pmol/L]
   B. Biopsy proven malignancy
      1. Initial staging

III. **Neck mass other than thyroid**\(^6,7\) [One of the following]
   A. Progressive growth
   B. Inflammatory mass not responding to antibiotic therapy for 4-6 weeks
   C. Recurrence or new mass at site of previously treated tumor
   D. Children: any mass detected by physical examination
   E. Fine needle aspiration consistent with metastatic disease (carcinoma, sarcoma) or lymphoma
   F. Suspected congenital neck mass [One of the following]
      1. Thyroglossal duct cyst with a non diagnostic ultrasound
      2. Brachial cleft cyst
      3. Lymphangioma
      4. Thymic cyst
   G. Neck abscess with pain and swelling at the site of concern [One of the following]
      1. Aural temperature > 38.3°C or 100.9°F
      2. Leukocytosis, WBC >11,500/cu.mm

IV. **Suspected orbital tumor or other pathology**\(^8\) [One of the following]
   A. Unilateral exophthalmos or enophthalmos
   B. Orbital or periorbital mass or vascular malformation
C. Adult with sudden vision loss (MRI of the brain without and with contrast 70553 should also be performed)
D. Proptosis (MRI of the brain without and with contrast, 70553, should also be performed)
E. Uveitis, scleritis and vision loss (MRI of the brain without and with contrast, 70553, should also be performed)
F. Head injury with visual loss (MRI of the brain without and with contrast, 70553, should also be performed)
G. Optic atrophy
H. Orbital cellulitis
I. Optic neuritis [gadolinium suggested] [One of the following]
   1. Vision loss in one eye with known MS
   2. Eye pain worsening with movement of the eye
   3. Visual field deficit which is mostly central
   4. Examination of the eye [One of the following]
      a. Swelling of the optic disc
      b. Blurring of disc margins
      c. Distended veins
   5. Loss of color vision
J. Proptosis in a child with orbital asymmetry and visual loss
K. Progressive visual loss in a child (should have MRI brain without and with contrast as well 70553)
L. Post-operative evaluation
M. Pre-operative evaluation
N. Papilledema
O. Orbital tumor [One of the following]
   1. Melanoma
   2. Retinoblastoma
   3. Lymphoma
   4. Metastases
P. Leukorrhea
Q. Ophthalmoplegia (MRI of the brain without and with contrast, 70553, should also be performed)

V. Suspected nasopharyngeal tumor8-11 [One of the below] (For known cancer see VI below.)
A. Symptoms [One of the following]
   1. Epistaxis
   2. Recurrent sinusitis after appropriate antibiotic therapy
B. Clinical findings: [One of the following]
   1. Nasal obstruction
   2. Positive endoscopy
   3. Headache
   4. Serous otitis media with hearing loss and otalgia
   5. Facial pain
   6. Epstein-Barr Virus (EBV) infection with positive titers
   7. Posterior (level V) neck node or mass
8. Cranial nerve involvement (is indicative of skull base extension and advanced disease)

VI. **Head and neck cancer** (MRI is strongly preferred for staging of oropharyngeal and oral tumors. MRI should be used to evaluate extension to skull base, orbit, cervical spine or neurovascular structures)\(^9\)\(^{12}\) [One of the following]

Includes but not limited to:
- Cancer of the arytenoid cartilage
- Cancer of the epiglottis
- Cancer of the hard palate
- Cancer of the infraglottic region
- Cancer of the larynx
- Cancer of the oral cavity
- Cancer of the paranasal sinuses
- Cancer of the pharynx
- Cancer of the salivary gland(s)
- Cancer of the soft palate
- Cancer of the supraglottic region
- Cancer of the tongue
- Cancer of the tonsils
- Cancer of the vocal cord(s)

Thyroid and parathyroid cancers do not fall into this category.

A. Initial staging of new diagnosis of head and neck cancer confirmed by biopsy (for initial staging MRI as well as PET/CT may be needed)

B. Following chemoradiation or radiation to the neck 4-8 weeks after completion of therapy if there is persistent disease or suspected progression

C. Following chemoradiation or radiation to the neck 6 weeks after completion of treatment if there is a clinical response (PET/CT is preferred but must wait at least 12 weeks)

D. If no chemoradiation then follow up within 6 months of completion of treatment

E. Deteriorating clinical condition with known head and neck cancer such as but not limited to new neck mass including new nodes, new hoarseness, weight loss, bleeding, dysphagia

F. New evidence of cranial nerve involvement

VII. **Airway compromise by neck mass**

A. Evidence of upper airway obstruction on pulmonary function testing
   1. Known neck mass
   2. Enlarged thyroid

VIII. **Neck abscess**

A. Aural temperature > 38.3°C or 100.9°F

B. Leukocytosis, WBC >11,500/cc.mm

C. Pain and swelling at site

IX. **Vocal cord paralysis or hoarseness**\(^{13}\)\(^{14}\) [One of the following] (Imaging should not be performed prior to laryngoscopy.) (For follow up of cancer see VI above.)
A. Unexplained vocal cord paralysis found on laryngoscopy  
B. Mass or lesion on the vocal cord found on laryngoscopy  
C. Injury to the recurrent laryngeal nerve [One of the following]  
   1. Prior cervical spine surgery  
   2. Prior thyroid surgery  
   3. Prior esophageal cancer surgery  
   4. Prior carotid endarterectomy  
   5. Left hilar lung mass  
   6. Left pneumonectomy  

X. **Brachial plexus** [One of the following]  
A. Brachial plexus injury [Both symptoms and appropriate history]  
   1. Symptoms [One of the following]  
      a. Weakness or paralysis of the upper extremity  
      b. Sensory loss or numbness of the upper extremity  
      c. Horner’s syndrome  
      d. Shoulder and/or arm pain  
      e. Burning or electric sensation in more than one nerve distribution  
      f. Loss of deep tendon reflexes in the upper extremity  
      g. EMG showing a neurogenic lesion in muscles supplied by at least 2 cervical levels  
   2. History [One of the following]  
      a. Trauma including birth trauma  
      b. Radiation fibrosis  
      c. History of radiation therapy to the chest, breast or axilla  
B. Primary or metastatic tumor [Both symptoms and appropriate history]  
   1. Symptoms [One of the following]  
      a. Weakness or paralysis of the upper extremity  
      b. Sensory loss or numbness of the upper extremity  
      c. Horner’s syndrome  
      d. Shoulder and/or arm pain  
      e. Burning or electric sensation in more than one nerve distribution  
      f. Loss of deep tendon reflexes in the upper extremity  
      g. EMG showing a neurogenic lesion in muscles supplied by at least 2 cervical levels  
   2. History [One of the following]  
      a. Known primary tumor  
      b. Lung cancer especially a Pancoast tumor  
      c. Lymphoma  
C. Schwannoma or neurofibroma  
   1. Symptoms [One of the following]  
      a. Palpable mass in the lower neck or supraclavicular fossa  
      b. Weakness or paralysis of the upper extremity  
      c. Sensory loss or numbness in the upper extremity  
      d. Horner’s syndrome  
      e. Shoulder and/or arm pain  
      f. Burning or electric sensation in more than one nerve distribution  
      g. Loss of deep tendon reflexes in the upper extremity  
      h. EMG showing a neurogenic lesion in muscles supplied by at least 2 cervical levels
D. Entrapment [One of the following]
   1. Symptoms
      a. Pain and paresthesia along the ulna aspect of the forearm, hand and 4th and 5th fingers
      b. Symptoms increase with overhead activities

XI. Proptosis\(^8\) (or exophthalmos)
   A. Orbital asymmetry in a child with visual loss
   B. Adult with painful visual loss

XII. Thyroid ophthalmopathy or thyroid eye disease and history of Graves' disease (CT is preferred) (This may be seen in hyperthyroid, hypothyroid or euthyroid individuals)\(^8\)

XIII. Visual field deficit (MRI is strongly preferred.)\(^\)\]
   A. Bitemporal hemianopsia (loss of peripheral vision)
   B. Homonymous hemianopsia (loss of vision in the nasal half of one eye and the outer half of the other eye)
   C. Scotoma (loss of central vision)
   D. Heteronymous hemianopsia (loss of vision in either the nasal half or the outer half of both eyes)

XIV. Thyroid mass with an enlarged thyroid gland on a nuclear scan and ultrasound that is incomplete or cannot demonstrate complete substernal extension

XV. Bell's palsy\(^16\) [One of the following]
   A. No improvement in facial paresis after one month
   B. Hearing loss
   C. Multiple cranial nerve deficits
   D. Weakness or sensory loss in an extremity

XVI. Hearing loss [One of the following]\(^17\)
   A. Suspected cholesteatoma with conductive hearing loss documented on an audiogram [One of the following]
      1. Acute and intermittent vertigo
      2. Painless otorrhea
      3. Purulent drainage from the ear or mastoid area
      4. Purulent drainage and granulation tissue in the ear
   B. Conductive hearing loss documented on an audiogram
   C. Total deafness and planning for possible cochlear implant
   D. Fluctuating hearing loss
   E. Glomus tumor and reddish blue mass in the ear

XVII. Deviation of the trachea on chest x-ray

XVIII. Otalgia with a normal ear examination\(^18,19\)
References:

70544  MRA or MRV of the Brain without Gadolinium
70545  MRA or MRV of the Brain with Gadolinium
70546  MRA or MRV of the Brain without and with Gadolinium

I.  Subarachnoid hemorrhage (SAH) which is documented by either lumbar puncture or CT¹⁻³

II.  Proven intracerebral bleed on CT or MRI¹ (hemorrhage or hematoma)

III.  Recent stroke by history¹,⁴

IV.  Cerebral aneurysm [One of the following]¹,⁵⁻¹¹
    A.  Screening study for cerebral aneurysm [One of the following]
        1.  First degree relative with history of cerebral aneurysm
        2.  Two or more relatives with a history of SAH
        3.  Polycystic kidney disease
        4.  Multiple meningiomas
        5.  Type IV Ehlers-Danlos syndrome
    B.  Suspected cerebral aneurysm [One of the following]
        1.  SAH or intracerebral hematoma on prior imaging
        2.  Isolated cranial nerve (CN) deficit
    C.  Known cerebral aneurysm documented by CTA, MRA or angiography [One of the following]
        1.  Follow-up after intervention (embolization or surgery)
            a.  Shortly after an interventional procedure (i.e., surgery or embolization)
            b.  Every 6 months after embolization
        2.  New or worsening clinical findings [One of the following]
            a.  Papilledema
            b.  Vomiting
            c.  Personality changes
            d.  Drowsiness
            e.  Seizure
            f.  Confusion
            g.  Memory loss
            h.  Gait disturbance
            i.  Paralysis or weakness on half of the body or face
            j.  Visual changes
            k.  Cranial nerve palsy
            l.  Headache
            m.  Nystagmus
            n.  Dysarthria
            o.  Dysphagia
            p.  Ataxia
        3.  Interval evaluation for stability in an asymptomatic individual
a. Aneurysm 5mm or less annually for up to 5 years and then every other year
b. Aneurysm more than 5mm every 6 months for up to 5 years and then annually

D. Neurofibromatosis
E. Visual field loss
F. Thunderclap headache
G. Exertional headache
H. Preoperative planning for cerebral aneurysm management (surgical or interventional)

V. Preoperative study, carotid endarterectomy planned\(^1\) [One of the following]
A. Asymptomatic patient with carotid stenosis of 60% or more by carotid duplex US
B. Symptomatic carotid stenosis with carotid duplex US showing 60% stenosis
C. Carotid duplex US showing ulcerated plaque

VI. Abrupt onset of a neurologic deficit – including stroke and TIA\(^1,4\) [One of the following]
A. Motor weakness affecting a limb, or one side of the face or body
B. Decreased sensation affecting a limb, or one side of the face or body
C. Acute ataxia (unsteady and clumsy motion of the limbs or trunk)
D. Mental confusion including memory loss and disorientation
E. Impaired vision, including amaurosis fugax, visual field loss and diplopia
F. Aphasia (loss or impairment of the ability to produce or comprehend language due to brain damage)
G. Dysarthria (speech disorder resulting from neurological injury)
H. Dysphagia with no GI cause
I. Vertigo with either headache or nystagmus
J. Numbness, tingling, paresthesias
K. Syncope
L. Decreased level of consciousness
M. Papilledema
N. Stiff neck
O. Drowsiness
P. New onset of vomiting
Q. Nystagmus
R. Cranial nerve palsy
S. Gait disturbance
T. Personality or behavioral changes
U. New seizure
V. Hearing loss or new onset tinnitus

VII. AVM (arteriovenous malformation)\(^12\) [One of the following]
A. Known AVM documented by CTA, MRA, MRI, catheter angiogram [One of the following
   1. Immediate follow-up after a therapeutic procedure (i.e. surgery, embolization, radiosurgery)
   2. Routine follow up after a therapeutic procedure
   3. New or worsening clinical findings
      a. Papilledema]
b. Vomiting  
c. Personality changes  
d. Drowsiness  
e. Seizure  
f. Confusion  
g. Memory loss  
h. Gait disturbance  
i. Paralysis or weakness on half of the body or face  
j. Visual changes  
k. Cranial nerve palsy  
l. Headache  
m. Nystagmus  
n. Dysarthria  
o. Dysphagia  
p. Ataxia

4. Planning of intervention (surgical or interventional)

B. Suspected AVM [One of the following]
   1. Severe unexplained headache (thunderclap headache)  
   2. Altered level of consciousness  
   3. Focal neurologic findings  
      a. Papilledema  
      b. Vomiting  
      c. Personality changes  
      d. Drowsiness  
      e. Seizure  
      f. Confusion  
      g. Memory loss  
      h. Gait disturbance  
      i. Paralysis or weakness on half of the body or face  
      j. Visual changes  
      k. Cranial nerve palsy  
      l. Headache  
      m. Nystagmus  
      n. Dysarthria  
      o. Dysphagia  
      p. Ataxia  
   4. Subarachnoid hemorrhage on recent CT or MRI of the brain  
   5. Subarachnoid hemorrhage on lumbar puncture  
   6. Intracerebral bleed or hematoma, or hemorrhage on prior CT or MRI of the brain

VIII. Suspected cerebral venous thrombosis with negative MRI of the brain\textsuperscript{13-15}  
[Both symptoms and risk factors]

A. Symptoms [One of the following]
   1. Papilledema  
   2. Headaches  
   3. Mental status changes
4. Vomiting  
5. Changes in vision  
6. Seizures  
7. Lethargy or coma  
8. Alternating focal neurological deficits  
9. Hemiparesis or paraparesis

**IX. Evaluation of tinnitus**

- (ringing, hissing, buzzing, roaring, clicking or rough sounds heard by patient)

**X. Vasculitis**

- **[Both]**
  - **A. Clinical presentation** [One of the following]
    1. Headache
    2. Seizures
    3. Focal neurologic deficit
    4. Altered level of consciousness
    5. Altered mood or personality
    6. Autoimmune disease such as but not limited to [One of the following]
      a. Systemic lupus erythematosus (SLE)
      b. Polyarteritis Nodosa
      c. Giant cell arteritis
      d. Sjogren's syndrome
      e. Behçet's syndrome
      f. Dermatomyositis

- **B. Laboratory tests** [One of the following]
  1. ESR >20 mm/hr
  2. C-reactive protein >10 mg/L
  3. ANA positive
  4. Anticardiolipin antibodies positive
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70544, 70545, 70546 MRA or MRV of the Brain

Clinical criteria reviewed/revised: 7/10/12, 7/6/12, 2/20/12, 8/22/11, 11/17/10, 5/26/10, 9/16/09

Medical Advisory Committee reviewed and approved: 9/19/12, 4/4/12, 9/21/11
I. **Suspected carotid stenosis**¹⁻⁵ [One of the following]
   A. TIA or stroke (See II below.)
   B. Findings on carotid duplex examination [One of the following]
      1. 60% stenosis or more
      2. Carotid duplex US showing ulcerated plaque
      3. Carotid occlusion
      4. Technically inadequate/equivocal carotid Doppler or
   C. Asymptomatic carotid bruit and inadequate carotid duplex ultrasound
   D. Carotid endarterectomy planned
      1. Duplex carotid ultrasound demonstrating [One of the following]
         a. Stenosis of 60% or more
         b. Ulcerated plaque on carotid duplex

II. **Abrupt onset of a neurologic deficit – including stroke and TIA**¹ [One of the following]
    A. Motor weakness affecting a limb, or one side of the face or body
    B. Decreased sensation affecting a limb, or one side of the face or body
    C. Acute ataxia (unsteady and clumsy motion of the limbs or trunk)
    D. Mental confusion including memory loss and disorientation
    E. Impaired vision, including amaurosis fugax, visual field loss and diplopia
    F. Aphasia (loss or impairment of the ability to produce or comprehend language due to brain damage)
    G. Dysarthria (speech disorder resulting from neurological injury)
    H. Dysphagia with no GI cause
    I. Vertigo with either headache or nystagmus
    J. Numbness, tingling, paresthesias
    K. Syncope
    L. Decreased level of consciousness
    M. Papilledema
    N. Stiff neck
    O. Drowsiness
    P. New onset of vomiting
    Q. Nystagmus
    R. Cranial nerve palsy
    S. Gait disturbance
    T. Personality or behavioral changes
    U. New seizure
V. Hearing loss or new onset tinnitus

III. Suspected traumatic or spontaneous carotid dissection [One of the following]6-10

   A. Neck pain
   B. Unilateral facial or orbital pain
   C. Unilateral headaches
   D. Horner’s syndrome, miosis, and ptosis (contraction of the iris, drooping eyelid)
   E. Transient ischemic attacks (TIA) (See II above.)
   F. Cranial nerve palsy
   G. New onset of stroke
   H. Minor neck trauma

IV. Carotid body tumor11-13 [Both]

   A. Carotid ultrasound demonstrating a solid mass at the carotid bifurcation and
   B. Preoperative surgical planning

V. Preoperative evaluation of neck tumor for vascular invasion

   A. CT or MRI of the neck demonstrating a mass close to the carotid artery

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### 70547, 70548, 70549 MRA or MRV Carotid and Vertebral Arteries

<table>
<thead>
<tr>
<th>Clinical criteria reviewed/revised:</th>
<th>7/6/12, 2/21/12, 8/22/11, 11/17/10, 9/19/09</th>
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<tr>
<td>Medical Advisory Committee reviewed and approved:</td>
<td>9/19/12, 4/4/12, 9/21/11</td>
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70551 MRI of the Brain without Gadolinium

I. Abrupt onset of a neurologic deficit – including stroke and TIA\(^1-3\) [One of the following]
   A. Motor weakness affecting a limb, or one side of the face or body
   B. Decreased sensation affecting a limb, or one side of the face or body
   C. Acute ataxia (unsteady and clumsy motion of the limbs or trunk)
   D. Mental confusion including memory loss and disorientation
   E. Impaired vision, including amaurosis fugax, visual field loss and diplopia
   F. Aphasia
   G. Dysarthria (speech disorder resulting from neurological injury)
   H. Dysphagia with no GI cause
   I. Vertigo with either headache or nystagmus
   J. Numbness, tingling, paresthesias
   K. Syncope
   L. Decreased level of consciousness
   M. Papilledema
   N. Stiff neck
   O. Drowsiness
   P. New onset of vomiting
   Q. Nystagmus
   R. Cranial nerve palsy
   S. Gait disturbance
   T. Personality or behavioral changes
   U. New seizure or
   V. Hearing loss or new onset tinnitus

II. Reevaluation after stroke [One of the following]
   A. Deteriorating clinical status with new or worsening neurologic findings
      1. Motor weakness affecting a limb, or one side of the face or body
      2. Decreased sensation affecting a limb, or one side of the face or body
      3. Acute ataxia (unsteady and clumsy motion of the limbs or trunk)
      4. Mental confusion including memory loss and disorientation
      5. Impaired vision, including amaurosis fugax, visual field loss and diplopia
      6. Aphasia
      7. Dysarthria (speech disorder resulting from neurological injury)
      8. Dysphagia with no GI cause
      9. Vertigo with either headache or nystagmus
     10. Numbness, tingling, paresthesias
     11. Syncope
     12. Decreased level of consciousness
     13. Papilledema
     14. Stiff neck
15. Drowsiness
16. New onset of vomiting
17. Nystagmus
18. Cranial nerve palsy
19. Gait disturbance
20. Personality or behavioral changes
21. New seizure
22. Hearing loss or new onset tinnitus
23. Anti-coagulation planned

III. **Headache [One of the following]**

A. Syncope
B. Papilledema
C. Worsened by Valsalva maneuver, coughing straining or postural changes
D. Wakens from sleep
E. Suspected subarachnoid hemorrhage (CT preferred in early phase.) [One of the following]
   1. With sudden onset of severe, exertional, or “thunderclap” headache
   2. Associated with nausea, vomiting, diplopia, seizure, mental status change
   3. Syncope
   4. History of prior known (documented on CTA, MRA or angiogram) aneurysm or AVM
F. Infection in an extracranial location
G. Change in mental status, personality, or level of consciousness
H. Suspected carotid artery dissection [One of the following] (MRI without and with contrast preferred)
   1. Neck pain
   2. Unilateral facial or orbital pain
   3. Unilateral headaches
   4. Horner’s syndrome, miosis and ptosis (contraction of the iris, drooping eyelid)
   5. Transient ischemic attacks (TIA see I above)
   6. Minor neck trauma
   7. Rapid onset of headache with strenuous exercise or Valsalva maneuver
I. Head pain that spreads into the lower neck and between the shoulders (May indicate meningeal irritation due to either infection or subarachnoid blood; it is not typical of a benign process.)
J. Suspected subdural hematoma [One of the following]
   1. Major head trauma
   2. Minor trauma while on anticoagulants
K. Thunderclap headache (CT preferred)
L. Worst headache of life (CT preferred)
M. New headache [One of the following]
   1. Abnormal neurologic examination [One of the following]
      a. Papilledema
      b. Vomiting
      c. Personality changes
      d. Drowsiness
      e. Seizure
      f. Confusion
g. Memory loss
h. Gait disturbance
i. Paralysis or weakness on half of the body or face
j. Visual changes
k. Cranial nerve palsy
l. Headache
m. Nystagmus
n. Dysarthria
o. Dysphagia
p. Ataxia
2. Aural temperature > 38.3°C or 100.9°F
3. Stiff neck (nuchal rigidity)
4. History of cancer
5. History of HIV infection
6. History of TB
7. History of sarcoidosis
8. Age 5 years or less
9. Over age 50
10. Pregnancy
11. Headache with exertion
12. Documented infection outside the brain
13. Mental status changes
14. Extracranial malignancy
N. Progressive worsening of headache
O. Numbness or tingling
P. New onset of chronic daily headache
Q. Known neurofibromatosis

IV. **Head trauma**¹¹⁻¹⁴ (CT preferred for first 24 hours) [One of the following]
A. Amnesia
B. Altered consciousness
C. Vomiting
D. Focal neurologic finding
   1. Papilledema
   2. Vomiting
   3. Personality changes
   4. Drowsiness
   5. Seizure
   6. Confusion
   7. Memory loss
   8. Gait disturbance
   9. Paralysis or weakness on half of the body or face
   10. Visual changes
   11. Cranial nerve palsy
   12. Headache
   13. Nystagmus
   14. Dysarthria
15. Dysphagia
16. Ataxia
E. Headache
F. Seizure
G. Coagulopathy
H. Interval follow up of known subdural, epidural or subperiosteal hematoma

V. Suspected or known AVM (arteriovenous malformation) [One of the following]
A. Known AVM documented by CTA, MRA, MRI, catheter angiogram
   1. Immediate follow-up after a therapeutic procedure (i.e., surgery, embolization, radiosurgery)
   2. Routine follow up after a therapeutic procedure
   3. New or worsening clinical findings
      a. Papilledema
      b. Vomiting
      c. Personality changes
      d. Drowsiness
      e. Seizure
      f. Confusion
      g. Memory loss
      h. Gait disturbance
      i. Paralysis or weakness on half of the body or face
      j. Visual changes
      k. Cranial nerve palsy
      l. Headache
      m. Nystagmus
      n. Dysarthria
      o. Dysphagia
      p. Ataxia
   4. Planning of intervention (surgical or interventional)
B. Suspected AVM
   1. Severe unexplained headache (thunderclap headache)
   2. Altered level of consciousness
   3. Focal neurologic findings
      a. Papilledema
      b. Vomiting
      c. Personality changes
      d. Drowsiness
      e. Seizure
      f. Confusion
      g. Memory loss
      h. Gait disturbance
      i. Paralysis or weakness on half of the body or face
      j. Visual changes
      k. Cranial nerve palsy
      l. Headache
      m. Nystagmus
n. Dysarthria
o. Dysphagia
p. Ataxia
4. Subarachnoid hemorrhage on recent CT or MRI of the brain
5. Subarachnoid hemorrhage on lumbar puncture
6. Intracerebral bleed or hematoma, or hemorrhage on prior CT or MRI of the brain

VI. Demyelinating disease (includes MS) [One of the following]^{15-20}
A. Suspected MS [One of the following]
   1. Difficulty walking
   2. Numbness
   3. Bladder dysfunction
   4. Optic neuritis
   5. Weakness of arms or legs
   6. Difficulty with balance
   7. Vertigo
   8. Hearing loss
   9. Constipation
   10. Memory loss
   11. Lhermitte’s sign
   12. Double vision
   13. Blurred vision
   14. Painful movement of the eye
   15. Nystagmus
   16. Impaired coordination or
B. Known MS [One of the following] (MRI with contrast is often preferred but non contrast may be approved if requested.)
   1. Annual scan in asymptomatic or stable member with known MS
   2. New or worsening clinical findings [One of the following]
      a. Difficulty walking
      b. Numbness
      c. Bladder dysfunction
      d. Optic neuritis
      e. Weakness of arms or legs
      f. Difficulty with balance
      g. Vertigo
      h. Hearing loss
      i. Constipation
      j. Memory loss
      k. Lhermitte’s sign
      l. Double vision
      m. Blurred vision
      n. Painful movement of the eye
      o. Nystagmus

VII. Impaired coordination
VIII. **Chronic or progressive mental status changes**
   A. Deteriorating cognitive function [One of the following]
      1. Progressive loss of memory
      2. Confusion
      3. Disorientation
      4. Personality changes

IX. **Hydrocephalus** [One of the following]
   A. Suspected obstructive hydrocephalus [Clinical findings and supportive history]
      1. Clinical findings [One of the following]
         a. Headache
         b. Papilledema
         c. Diplopia
         d. Mental status changes
         e. Gait disturbance or ataxia (People with ataxia experience a failure of muscle control in their arms and legs, resulting in a lack of balance and coordination or a disturbance of gait.)
         f. Seizure and
      2. History of [One of the following]
         a. Arteriovenous malformation (AVM)
         b. Aneurysm
         c. Intraventricular or SAH
         d. Meningitis
         e. Known hydrocephalus
   B. Normal pressure hydrocephalus (NPH) [One of the following]
      1. Apraxic gait (Apraxia is a motor disorder in which volitional or voluntary movement is impaired without muscle weakness.)
      2. Motor perseveration
      3. Urinary incontinence
      4. Dementia
      5. Known NPH with worsening symptoms
   C. Suspicion of VP (ventriculoperitoneal) shunt malfunction

X. **Arnold-Chiari malformation** [One of the following]
   A. Cranial nerve palsy
   B. Headache
   C. Incontinence
   D. Lumbar myelomeningocele
   E. Neck or back pain
   F. Sensory loss
   G. Syncope
   H. Tethered cord
   I. Unsteady gait
   J. Lower extremity spasticity
   K. Follow up known Chiari with new or changed symptoms
XI. Dandy-Walker cyst

XII. Encephalocele

XIII. Microcephaly
   A. Head circumference greater than 2 standard deviations average for age

XIV. Macrocephaly
   A. Head circumference smaller than 2 standard deviations average for age

XV. Developmental delay

XVI. Multiple congenital anomalies

XVII. Seizures [One of the following]
   A. New onset of seizures (MRI without and with contrast is strongly preferred)
   B. Epilepsy
   C. Suspected neuroectodermal dysplasia
   D. Suspicion of migration anomalies or other morphologic brain abnormalities in children
   E. Suspicion of cortical dysplasia

XVIII. Follow up subdural hematoma, epidural or subarachnoid hemorrhage [One of the following]
   A. Change in mental status
   B. New neurologic findings
   C. Papilledema
   D. New onset headache or changing headache
   E. Follow-up within 36 hours of initial presentation if not performed previously
   F. Interval follow-up with no change in clinical signs or symptoms

XIX. Parkinson's disease or syndrome

XX. Huntington's disease

XXI. Dementia [One of the following]
   A. Frontotemporal dementia
   B. Vascular dementia
   C. Alzheimer's disease

XXII. Suspicion of neuroectodermal dysplasia
References:


32. Local Coverage Determination for Magnetic Resonance Imaging (L28723), Wisconsin Physicians Service Insurance Corporation, Iowa, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=17&CntrctrType=1%7c9&KeyWord=70551&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=70551&kq=true&bc=IAAAAAAAAAA.
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35. Local Coverage Determination for Magnetic Resonance Imaging (L28723), Wisconsin Physicians Service Insurance Corporation, Minnesota, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=28&CntrctrType=1%7c9&KeyWord=70551&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=70551&kq=true&bc=IAAAAAAAAAA.
36. Local Coverage Determination for Magnetic Resonance Imaging (L28723), Wisconsin Physicians Service Insurance Corporation, Missouri, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=29&CntrctrType=1%7c9&KeyWord=70551&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=70551&kq=true&bc=IAAAAAAAAAA.
37. Local Coverage Determination for Magnetic Resonance Imaging (L28723), Wisconsin Physicians Service Insurance Corporation, Nebraska, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=36&CntrctrType=1%7c9&KeyWord=70551&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=70551&kq=true&bc=IAAAAAAAAAA.
38. Local Coverage Determination for Magnetic Resonance Imaging (L28723), Wisconsin Physicians Service Insurance Corporation, Wisconsin, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=57&CntrctrType=1%7c9&KeyWord=70551&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=70551&kq=true&bc=IAAAAAAAAAA.

70551 MRI of the Brain without Gadolinium

Clinical criteria reviewed/revised: 7/6/12, 5/25/12, 8/24/11, 11/17/10, 12/09, 3/18/09
Medical Advisory Committee reviewed and approved: 4/4/12, 9/21/11
70552 MRI Brain with Gadolinium
70553 MRI Brain without and with Gadolinium

I. Suspected pseudotumor cerebri¹⁻²
   A. Clinical finding
      1. Symptoms or findings on exam [One of the following]
         a. Headache
         b. Visual disturbances or complete loss of vision, which may be transient
         c. Flashing lights
         d. Diplopia
         e. Loss of vision
         f. Blurred vision
         g. Level of consciousness may be impaired
         h. Nausea and/or vomiting
         i. Tinnitus (pulsatile) or ringing in the ears
         j. Papilledema
         k. Enlargement blind spots
         l. Abducens palsy (inability to deviate the eye laterally)

II. Seizure³⁻⁶ [One of the following]
   A. Initial evaluation of new onset of seizures
   B. Known seizure disorder with an increase in seizure activity or are refractory to treatment at adequate dosage

III. CNS infection or abscess with evidence of infection and neurologic complaints or findings or follow up of known cerebral infection⁷⁻⁹ [Both A and B for new infection or C for follow up]
   A. Findings suggesting infection [One of the following]
      1. Aural temperature > 38.3°C or 100.9°F
      2. Leukocytosis, WBC >11,500/cu.mm
      3. Known infection elsewhere
      4. Immunocompromised patient
   B. Other clinical findings [One of the following]
      1. Headache
      2. Drowsiness or confusion
      3. Focal neurological findings
      4. Vomiting
      5. Seizure
      6. Stiff neck
      7. Photophobia
      8. Recurrence of symptoms after antibiotic therapy
   C. Follow-up during therapy to assess effectiveness and after completion are appropriate
IV. Brain tumor\textsuperscript{10-18} [One of the following]
   A. Clarification of brain mass detected on CT exam or prior non contrast MRI (For evaluation of possible pituitary problems please see indication XIV below)
   B. Evaluation of known primary brain tumor which may include but not limited to any of the following brain tumors:
      - Astrocytoma
      - Choroid plexus papilloma
      - Ependymoma
      - Glioma
      - Glioblastoma
      - Glioblastoma multiforme
      - Hemangioblastoma
      - Medulloblastoma
      - Meningioma
      - Oligodendroglioma
      - Pituitary adenoma (Please see XIV below)
      - Glioblastoma
      - Glioma
      - Primitive neuroectodermal tumor (PNET)
   1. New signs and symptoms or worsening neurological condition [One of the following]
      a. Papilledema
      b. Vomiting
      c. Personality changes
      d. Drowsiness
      e. Seizure
      f. Confusion
      g. Memory loss
      h. Gait disturbance
      i. Paralysis or weakness on half of the body or face
      j. Visual changes
      k. Cranial nerve palsy
      l. Headache
      m. Nystagmus
      n. Dysarthria
      o. Dysphagia
      p. Ataxia
   2. Interval re-evaluation of known brain tumor [One of the following]
      a. Anaplastic astrocytoma, anaplastic oligodendroglioma or glioblastoma multiforme or any high-grade or aggressive primary brain tumor [One of the following]
         i. Re-image after surgery (complete or subtotal)
         ii. Image 2-6 weeks after completion of radiation therapy
         iii. Following completion of chemotherapy
         iv. Every 60-120 days for 2-3 years if asymptomatic and then every 6 months
         v. New signs and symptoms (see 1 above) regardless of date of last imaging
b. Other primary intracranial cancers if clinically stable may be imaged at completion of treatment and thereafter at 90- to 180-day intervals for 5 years and then at least annually.

C. **Evaluation for known or suspected brain metastases** in patients with known extra cranial malignancy [One of the following]

1. Routine initial staging for the following [One of the following]
   a. Sarcoma
   b. Melanoma
   c. Small cell lung cancer
   d. Non-small cell lung cancer

2. New neurological signs or symptoms with any other known malignancy [One of the following]
   a. Papilledema
   b. Vomiting
   c. Personality changes
   d. Drowsiness
   e. Seizure
   f. Confusion
   g. Memory loss
   h. Gait disturbance
   i. Paralysis or weakness on half of the body or face
   j. Visual changes
   k. Cranial nerve palsy
   l. Headache
   m. Nystagmus
   n. Dysarthria
   o. Dysphagia
   p. Ataxia

3. Follow-up known brain metastases during and after chemotherapy [One of the following]
   a. Follow-up after intervention to establish a new baseline
   b. Imaging (preferably MRI) every 3 months for one year after completion of therapy
   c. After one year imaging is performed based on clinical signs and symptoms
   d. Melanoma stage IIB or higher annually

4. Follow-up known brain metastases after whole brain radiation therapy [One of the following]
   a. Follow-up after intervention to establish a new baseline
   b. Imaging (preferably MRI) every 6 weeks x2 then every 3 months for a year
   c. After one year imaging is performed based on clinical signs and symptoms.
   d. Melanoma stage IIB or higher annually

5. Follow-up known brain metastases after stereotactic or cyber knife radiation treatment [One of the following]
   a. Every 6 weeks x2 then every 12 weeks x2 then every 3-6 months if stable

6. Follow-up known brain metastases after surgery [One of the following]
   a. Follow-up after intervention to establish a new baseline
   b. Imaging (preferably MRI) every 6 weeks x2 then every 3 months for a year
   c. After one year imaging is performed based on clinical signs and symptoms.
d. Melanoma stage IIIB or higher annually
7. Known brain metastases with new neurological signs or symptoms such as indicated in B2
D. Cranial nerve palsy – see V below
E. Suspected brain tumor [One of the following]
1. New onset of neurologic findings [One of the following]
   a. Papilledema
   b. Vomiting
   c. Personality changes
   d. Drowsiness
   e. Seizure
   f. Confusion
   g. Memory loss
   h. Gait disturbance
   i. Paralysis or weakness on half of the body or face
   j. Visual changes
   k. Cranial nerve palsy
   l. Headache
   m. Nystagmus
   n. Dysarthria
   o. Dysphagia
   p. Ataxia

V. Suspected tumor of or affecting one or more cranial nerves

<table>
<thead>
<tr>
<th>1st</th>
<th>Olfactory</th>
<th>Loss or disturbance of the sense of smell.</th>
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</thead>
<tbody>
<tr>
<td>2nd</td>
<td>Optic</td>
<td>Blindness of various types, depending on lesion location.</td>
</tr>
<tr>
<td>3rd</td>
<td>Oculomotor</td>
<td>Ptosis (drooping) of eyelid, deviation of the eyeball outward, dilatation of the pupil, double vision.</td>
</tr>
<tr>
<td>4th</td>
<td>Trochlear</td>
<td>Rotation of the eyeball upward and outward, double vision.</td>
</tr>
<tr>
<td>5th</td>
<td>Trigeminal</td>
<td>Sensory root: Pain or loss of sensation in face, forehead, temple, and eye. Motor root: Deviation of the jaw toward paralyzed side, difficulty in chewing.</td>
</tr>
<tr>
<td>6th</td>
<td>Abducens</td>
<td>Deviation of the eye outward, double vision.</td>
</tr>
<tr>
<td>7th</td>
<td>Facial</td>
<td>Paralyses of all the muscles on one side of the face, inability to wrinkle the forehead, close the eye, or whistle. Deviation of the mouth toward the sound side. Decreased sense of taste.</td>
</tr>
<tr>
<td>8th</td>
<td>Vestibulocochlear</td>
<td>Deafness or ringing in the ears, dizziness, nausea and vomiting, reeling.</td>
</tr>
<tr>
<td>9th</td>
<td>Glossopharyngeal</td>
<td>Disturbance of taste. Difficulty in swallowing.</td>
</tr>
<tr>
<td>10th</td>
<td>Vagus</td>
<td>Paralysis of the main trunk on one side causes hoarseness and difficulty in swallowing and talking.</td>
</tr>
<tr>
<td>11th</td>
<td>Spinal accessory</td>
<td>Drooping of the shoulder. Inability to rotate the head away from the affected side. Weakness of the trapezius or sternocleidomastoid.</td>
</tr>
<tr>
<td>12th</td>
<td>Hypoglossal</td>
<td>Paralysis of one side of the tongue. Deviation of the tongue toward the paralyzed side. Thick speech.</td>
</tr>
</tbody>
</table>

VI. Known AVM (arteriovenous malformation)
A. Known AVM documented by CTA, MRA, MRI, catheter angiogram [One of the following]
   1. Immediate follow-up after a therapeutic procedure (i.e. surgery, embolization, radiosurgery)
   2. Routine follow-up after a therapeutic procedure
   3. New or worsening clinical findings [One of the following]
      a. Papilledema
      b. Vomiting
      c. Personality changes
      d. Drowsiness
      e. Seizure
      f. Confusion
      g. Memory loss
      h. Gait disturbance
      i. Paralysis or weakness on half of the body or face
      j. Visual changes
      k. Cranial nerve palsy
      l. Headache
      m. Nystagmus
      n. Dysarthria
      o. Dysphagia
      p. Ataxia
   4. Planning of intervention (surgical or interventional)

B. Suspected AVM [One of the following]
   1. Severe unexplained headache (thunderclap headache)
   2. Altered level of consciousness
   3. Focal neurologic findings [One of the following]
      a. Papilledema
      b. Vomiting
      c. Personality changes
      d. Drowsiness
      e. Seizure
      f. Confusion
      g. Memory loss
      h. Gait disturbance
      i. Paralysis or weakness on half of the body or face
      j. Visual changes
      k. Cranial nerve palsy
      l. Headache
      m. Nystagmus
      n. Dysarthria
      o. Dysphagia
      p. Ataxia
   4. Subarachnoid hemorrhage on recent CT or MRI of the brain
   5. Subarachnoid hemorrhage on lumbar puncture
   6. Intracerebral bleed or hematoma, or hemorrhage on prior CT or MRI of the brain

VII. Systemic disease affecting the brain [One of the following]23-27
A. Systemic lupus erythematosus (SLE) or vasculitis [One of the following]
   1. Alteration in level of consciousness
   2. Cranial nerve involvement
B. HIV [One of the following]
   1. Cerebritis
   2. Encephalitis
   3. Meningitis
   4. Vasculitis
C. Sarcoidosis

VIII. **Known demyelinating disease (includes MS)**\(^{19,28-33}\)
A. Known MS [One of the following]
   1. New or worsening clinical findings [One of the following]
      a. Difficulty walking
      b. Numbness
      c. Bladder dysfunction
      d. Optic neuritis
      e. Weakness of arms or legs
      f. Difficulty with balance
      g. Vertigo
      h. Hearing loss
      i. Constipation
      j. Memory loss
      k. Lhermitte’s sign
      l. Double vision
      m. Blurred vision
      n. Painful movement of the eye
      o. Nystagmus
      p. Impaired coordination
   2. Follow-up to assess treatment
      a. For individuals with multiple sclerosis who are being treated with natalizumab (Tysabri\(^\circ\)) or Rebid, Betaseron or Avenox MRI with gadolinium may be approved every 3-6 months for follow-up.

B. Annual study for known MS

IX. **Suspected multiple sclerosis with visual disturbance or optic neuritis**\(^{19}\)
A. Visual disturbances, **optic neuritis** [One of the following]
   1. Scotoma
   2. Pain with movement of the eye
   3. Ophthalmoplegia
   4. Marcus Gunn pupil

X. **Suspected acoustic neuroma (schwannoma) or cerebellopontine angle tumor with either neurofibromatosis or symptoms and findings on examination or testing**\(^{20,34-36}\)
A. Symptoms [One of the following]
1. Headache
2. Disturbed balance or gait
3. Tinnitus
4. Altered sense of taste

B. Findings/test results [One of the following]
   1. Asymmetric sensorineural hearing loss by audiometry
   2. Facial weakness

C. Neurofibromatosis

XI. Labyrinthitis, vestibular neuronitis\textsuperscript{20} [All]
A. Episodic vertigo
B. Ear normal by PE
C. Continued or worsening vertigo after at least one week of medical treatment with any appropriate medication

XII. Suspected cerebral venous thrombosis\textsuperscript{2,37-39} [One of the following]
A. Symptoms [One of the following]
   1. Papilledema
   2. Headaches
   3. Mental status changes
   4. Vomiting
   5. Changes in vision
   6. Seizures
   7. Lethargy or coma
   8. Alternating focal neurological deficits
   9. Hemiparesis or paraparesis

B. Risk factors [One of the following]
   1. Postpartum
   2. Postoperative status
   3. Skull fracture over dural sinus
   4. Calvarial mass
   5. Meningitis, sinusitis or middle ear infections
   6. Hypercoagulable state [One of the following]
      a. Cancer
      b. Dehydration
      c. Contraceptive medications
      d. Sickle cell disease
      e. SLE
      f. Protein S deficiency
      g. Protein C deficiency
      h. Other medications
   7. Ear infection
   8. Brain tumor by history

XIII. Evaluation of tinnitus\textsuperscript{40-43} (ringing, hissing, buzzing, roaring, clicking, or rough sounds heard by patient)
XIV. Suspected pituitary abnormality including macroadenomas and microadenomas [One of the following]

A. Elevated pituitary hormones including precocious puberty
   1. Prolactin (PRL) >20 ng/mL [g/L]
   2. Growth hormone (GH) higher than laboratory normal range
   3. Thyroid-stimulating hormone (TSH) >4U/mL [mcIU/L] [Both]
   4. Follicle-stimulating hormone (FSH)
      a. Male: >10 mIU/mL
      b. Female: (mIU/mL)
         i. Follicular phase >13
         ii. Luteal phase >13
         iii. Mid-cycle >22
         iv. Postmenopausal >150
   5. Luteinizing hormone (LH)
      a. Male: >8 mIU/mL
      b. Female: (mIU/mL)
         i. Follicular phase >12
         ii. Luteal phase >15
         iii. Mid-cycle peak >77
         iv. Postmenopausal >40
   6. Adrenocorticotropic hormone (ACTH) >46 pg/mL

B. Hypopituitarism including hypogonadism [One of the following]
   1. Pituitary apoplexy [One of the following]
      a. Acute headache with vomiting
      b. Ophthalmoplegia
      c. Amaurosis
      d. Depressed level of consciousness
      e. Bitemporal hemianopsia
   2. Acquired hypopituitarism [One of the following]
      a. Cranial irradiation
      b. Brain surgery
      c. Head trauma
      d. Empty sella
      e. Hemochromatosis
      f. Prior brain infection
      g. Known pituitary tumor
      h. Langerhans cell histiocytosis of the pituitary
   3. Gonadotropin deficiency or hypogonadism
      a. Male [All]
         i. History [One of the following]
            01. Loss of libido
            02. Impotence
            03. History of undescended testicle or cryptorchism
            04. History of testicular failure
            05. History of chemotherapy or radiation therapy
            06. Visual field disorder
07. Decreased body hair
08. Gynecomastia
09. Galactorrhea
   ii. Laboratory tests
      01. Normal to low normal free testosterone, LH and FSH

b. Female
   i. Oligomenorrhea or amenorrhea
   ii. Low normal LH, FSH

4. TSH deficiency with TSH < .4 and low to low-normal T4 and T3
5. ACTH deficiency
6. ADH deficiency
7. Growth hormone deficiency [One of the following]
   a. Adults [One of the following]
      i. Decreased levels of 3 or more pituitary hormones (TSH, LH, FSH, ACTH, GHRH, ADH)
      ii. Decreased levels of IGF-I (Insulin-like growth factor I) based on laboratory normal range
      iii. Insulin tolerance test (contraindicated in individuals with history of seizures coronary artery disease)
         01. Growth hormone response < 10 ng/ml
      iv. Arginine stimulating test
         01. Growth hormone response < 10 ng/ml
   b. Children with no evidence of malignancy, Crohn’s disease, renal disease, hypothyroidism or Turner syndrome and one of the following
      i. Bone age more than 2 standard deviations below the mean for age
      ii. History of surgery or radiation in the pituitary or hypothalamus regions
      iii. Growth hormone levels below normal (<10 ng/ml)
      iv. History of intrauterine growth retardation
      v. Prader-Willi syndrome
      vi. Children over the age of 1
         01. Insulin tolerance test positive
         02. Growth hormone response < 10 ng/mL

8. Visual problems [One of the following]
   a. Bitemporal visual field loss – loss of peripheral vision bilaterally
   b. Optic atrophy
   c. Drooping eyelid
   d. Diabetes insipidus

C. Known pituitary tumor (adenoma, microadenoma, macroadenoma)
   1. Following transsphenoidal resection
   2. Following radiation therapy
   3. New signs or symptoms such as visual changes, new headache, new onset of vomiting, papilledema, drooping eyelid, optic atrophy
   4. Follow up of **asymptomatic nonfunctioning microadenoma** < 6mm in size
      a. MRI at one year
      b. MRI every 1-2 years for 3 years and then less frequently as long as tumor does not increase in size
5. Follow up of asymptomatic nonfunctioning macroadenoma 6 months after the initial diagnosis and then annually

XV. Encephalocele

XVI. Suspicion of trigeminal neuralgia
A. Symptoms [One of the following]
   1. Intermittent pain in the distribution of V2 and/or V3
   2. Facial spasm
   3. Failed carbamazepine therapy

XVII. Neurofibromatosis [One of the following]
A. Café au lait spots (5 or more)
B. Skin fold freckling
C. First-degree relative (parent sibling or child) with neurofibromatosis either 1 or 2
D. Scoliosis
E. Seizure disorder
F. Peripheral neurofibromas (2 or more)
G. Hearing loss
H. Brain tumor
I. Spinal cord tumor
J. Lisch nodules in the iris of the eye
K. Bone dysplasia (sphenoid wing, bowing of long bones)
L. Headache

XVIII. Neurosarcoid
A. Adult with known sarcoid and one of the following
   1. Cranial nerve palsy see V above
   2. Headache
   3. Seizure
   4. Sensory deficit
   5. Pituitary dysfunction
   6. Vision loss
   7. Cognitive changes
   8. Psychiatric symptoms
B. Children with known sarcoid and one of the following
   1. Seizures
   2. Short stature
   3. Diabetes insipidus
   4. Lack of sexual maturation
   5. Cranial nerve palsy – see V above
   6. Headache
   7. Seizure
   8. Sensory deficit
   9. Pituitary dysfunction
   10. Vision loss
11. Cognitive changes
12. Psychiatric symptoms

**XIX. **Short stature with height 2 standard deviations below the mean for age and gender\(^63\) [One of the following]
A. History of surgery or radiation in the pituitary or hypothalamus regions
B. Growth hormone levels below normal (<10 ng/ml)
C. History of intrauterine growth retardation
D. Prader-Willi syndrome
E. Children over the age of 1
   1. Insulin tolerance test positive
      a. Growth hormone response < 10 ng/ml

**XX. **Papilledema

**XXI. **Cerebral hypotension\(^64\)
A. Headache [One of the following]
   1. Increases when the individual is upright and decreases quickly when recumbent
   2. Increases with coughing, straining, sneezing

**XXII. **Proptosis\(^19\) (or exophthalmos) (MRI of the brain and orbits is preferred.) [One of the following]
A. Orbital asymmetry in a child with loss or decreased vision or sight
B. Adult with painful loss or decreased vision or sight
C. Graves’ disease

**XXIII. **Visual field deficit [One of the following]
A. Bitemporal hemianopsia (loss of peripheral vision)
B. Homonymous hemianopsia (loss of vision in the nasal half of one eye and the outer half of the other eye)
C. Scotoma (loss of central vision)
D. Heteronymous hemianopsia (loss of vision in either the nasal half or the outer half of both eyes)

**XXIV. **Hearing loss\(^20\) [One of the following]
A. Suspected cholesteatoma and audiogram demonstrating conductive hearing loss (CT of the petrous bone is preferred.) and one of the following
   1. Acute and intermittent vertigo
   2. Painless otorrhea
   3. Purulent drainage from the ear or mastoid area
   4. Purulent drainage and granulation tissue in the ear
B. Conductive hearing loss documented on recent audiogram
C. Total deafness and preoperative planning of cochlear implants (CT of the petrous bone is preferred.)
D. Fluctuating hearing loss
E. Glomus tumor with reddish-blue mass in the ear
XXV. Bell’s palsy with unusual presentation [One of the following]\(^{65,66}\)

A. No improvement in facial paresis after one month
B. Hearing loss
C. Multiple cranial nerve deficits
D. Weakness or sensory loss in an extremity
E. Bilateral symptoms

XXVI. Thyroid ophthalmopathy or thyroid eye disease and history of Graves’ disease and TSH < .4 [One of the following]\(^{19}\)

A. Total T3 > 180ng/dL
B. T4 > 1.8ng/dL
C. Thyroid-stimulating antibodies or thyroid receptor antibodies positive
D. Thyroid-stimulating immunoglobulins or TSIs positive

References:


70552, 70553 MRI of the Brain with Contrast and MRI of the Brain without and with Contrast
Clinical criteria reviewed/revised: 7/6/12, 2/2/12, 8/23/11, 11/17/10, 12/09, 3/18/09
Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
70551 MRI of the Brain without Gadolinium
70552 MRI Brain with Gadolinium
70553 MRI Brain without and with Gadolinium

Medicare AL, FL, GA, TN

I. Detection and evaluation of A-V malformations

II. Detection and evaluation of cavernous hemangiomas

III. Detection and evaluation of cerebral aneurysms (CTA or MRA is preferred.)

IV. Lesions of the cranial nerves (MRI without and with contrast is strongly recommended.)

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<thead>
<tr>
<th></th>
<th>Cranial Nerve</th>
<th>Symptom</th>
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<tbody>
<tr>
<td>1st</td>
<td>Olfactory</td>
<td>Loss or disturbance of the sense of smell.</td>
</tr>
<tr>
<td>2nd</td>
<td>Optic</td>
<td>Blindness of various types, depending on lesion location.</td>
</tr>
<tr>
<td>3rd</td>
<td>Occulomotor</td>
<td>Ptosis (drooping) of eyelid, deviation of the eyeball outward, dilatation of the pupil, double vision.</td>
</tr>
<tr>
<td>4th</td>
<td>Trochlear</td>
<td>Rotation of the eyeball upward and outward, double vision.</td>
</tr>
<tr>
<td>5th</td>
<td>Trigeminal</td>
<td>Sensory root: Pain or loss of sensation in face, forehead, temple, and eye. Motor root: Deviation of the jaw toward paralyzed side, difficulty in chewing.</td>
</tr>
<tr>
<td>6th</td>
<td>Abducens</td>
<td>Deviation of the eye outward, double vision.</td>
</tr>
<tr>
<td>7th</td>
<td>Facial</td>
<td>Paralysis of all the muscles on one side of the face, inability to wrinkle the forehead, close the eye, or whistle. Deviation of the mouth toward the sound side. Decreased sense of taste.</td>
</tr>
<tr>
<td>8th</td>
<td>Vestibulocochlear</td>
<td>Deafness or ringing in the ears, dizziness, nausea and vomiting, reeling.</td>
</tr>
<tr>
<td>9th</td>
<td>Glossopharyngeal</td>
<td>Disturbance of taste. Difficulty in swallowing.</td>
</tr>
<tr>
<td>10th</td>
<td>Vagus</td>
<td>Paralysis of the main trunk on one side causes hoarseness and difficulty in swallowing and talking.</td>
</tr>
<tr>
<td>11th</td>
<td>Spinal accessory</td>
<td>Drooping of the shoulder. Inability to rotate the head away from the affected side. Weakness of the trapezius or sternocleidomastoid</td>
</tr>
<tr>
<td>12th</td>
<td>Hypoglossal</td>
<td>Paralysis of one side of the tongue. Deviation of the tongue toward the paralyzed side. Thick speech.</td>
</tr>
</tbody>
</table>

V. Demyelinating disease (MRI of the brain without contrast is preferred for suspected disease and without and with contrast for known disease.) (includes MS)5-10

A. Suspected [One of the following]
   1. Difficulty walking
2. Numbness, tingling
3. Bladder dysfunction
4. Optic neuritis
5. Weakness of arms or legs
6. Difficulty with balance
7. Vertigo
8. Hearing loss
9. Constipation
10. Memory loss
11. Lhermitte's sign
12. Double vision
13. Blurred vision
14. Painful movement of the eye or
15. Nystagmus
16. Impaired coordination or

B. Known [One of the following] (MRI with contrast is often preferred but non contrast may be approved if requested.)
   1. Annual scan in asymptomatic or stable member with known MS
   2. New or worsening clinical findings [One of the following]
      a. Difficulty walking
      b. Numbness
      c. Bladder dysfunction
      d. Optic neuritis
      e. Weakness of arms or legs
      f. Difficulty with balance
      g. Vertigo
      h. Hearing loss
      i. Constipation
      j. Memory loss
      k. Lhermitte's sign
      l. Double vision
      m. Blurred vision
      n. Painful movement of the eye
      o. Nystagmus
      p. Impaired coordination

VI. Suspected acoustic neuroma (schwannoma) or cerebellopontine angle tumor with either neurofibromatosis or symptoms and findings on examination or testing (MRI without and with contrast is preferred.)\(^\text{11-14}\)
   A. Symptoms [One of the following]
      1. Headache
      2. Disturbed balance or gait
      3. Tinnitus
      4. Altered sense of taste
   B. Findings/test results [One of the following]
      1. Sensorineural hearing loss by audiometry
2. Facial weakness  
C. Neurofibromatosis  

VII. Suspected pituitary abnormality including macroadenomas and microadenomas (MRI without and with contrast is strongly preferred.) [One of the following] 

A. Elevated pituitary hormones including precocious puberty  
   1. Prolactin (PRL) >20 ng/mL [g/L] 
   2. Growth hormone (GH) higher than laboratory normal range 
   3. Thyroid-stimulating hormone (TSH) >4U/mL [mcU/L] 
   4. Follicle-stimulating hormone (FSH)  
      a. Male: >10 mIU/mL  
      b. Female: (mIU/mL)  
         i. Follicular phase >13  
         ii. Luteal phase >13  
         iii. Mid-cycle >22  
         iv. Postmenopausal >150  

B. Luteinizing hormone (LH)  
   a. Male: >8 mIU/mL  
   b. Female: (mIU/mL)  
      i. Follicular phase >12  
      ii. Luteal phase >15  
      iii. Mid-cycle peak >77  
      iv. Postmenopausal >40  

6. Adrenocorticotropic hormone (ACTH) >46 pg/mL 

B. Hypopituitarism including hypogonadism [One of the following]  
   1. Pituitary apoplexy [One of the following]  
      a. Acute headache with vomiting  
      b. Ophthalmoplegia  
      c. Amaurosis  
      d. Depressed level of consciousness  
      e. Bitemporal hemianopsia  
   2. Acquired hypopituitarism [One of the following]  
      a. Cranial irradiation  
      b. Brain surgery  
      c. Head trauma  
      d. Empty sella  
      e. Hemochromatosis  
      f. Prior brain infection  
      g. Known pituitary tumor  
      h. Langerhans cell histiocytosis of the pituitary  
   3. Gonadotropin deficiency or hypogonadism  
      a. Male [All]  
         i. History [One of the following]  
            01. Loss of libido  
            02. Impotence
03. History of undescended testicle or cryptorchism
04. History of testicular failure
05. History of chemotherapy or radiation therapy
06. Visual field disorder
07. Decreased body hair
08. Gynecomastia
09. Galactorrhea

ii. Laboratory tests
   01. Normal to low normal free testosterone, LH, and FSH

b. Female
   i. Oligomenorrhea or amenorrhea
   ii. Low normal LH, FSH

4. TSH deficiency with TSH < .4 and low to low-normal T4 and T3
5. ACTH deficiency
6. ADH deficiency (diabetes insipidus)
7. Growth hormone deficiency [One of the following]
   a. Adults [One of the following]
      i. Decreased levels of 3 or more pituitary hormones (TSH, LH, FSH, ACTH, GHRH, ADH)
      ii. Decreased levels of IGF-I (insulin-like growth factor I) based on laboratory normal range
      iii. Insulin tolerance test (contraindicated in individuals with history of seizures, coronary artery disease)
           01. Growth hormone response < 10 ng/ml
      iv. Arginine stimulating test
           01. Growth hormone response < 10 ng/ml
   b. Children with no evidence of malignancy, Crohn's disease, renal disease, hypothyroidism or Turner syndrome and one of the following
      i. Bone age more than 2 standard deviations below the mean for age
      ii. History of surgery or radiation in the pituitary or hypothalamus regions
      iii. Growth hormone levels below normal (< 10 ng/ml)
      iv. History of intrauterine growth retardation
      v. Prader-Willi syndrome
      vi. Children over the age of 1
           01. Insulin tolerance test positive
           02. Growth hormone response < 10 ng/mL

8. Visual problems [One of the following]
   a. Bitemporal visual field loss – loss of peripheral vision bilaterally
   b. Optic atrophy
   c. Drooping eyelid
   d. Diabetes insipidus

C. Known pituitary tumor (adenoma, microadenoma, macroadenoma)
   1. Following transsphenoidal resection
   2. Following radiation therapy
   3. New signs or symptoms such as visual changes, new headache, new onset of vomiting, papilledema, drooping eyelid, optic atrophy
   4. Follow up of asymptomatic nonfunctioning microadenoma < 6mm in size
a. MRI at one year
b. MRI every 1-2 years for 3 years and then less frequently as long as tumor does not increase in size

5. Follow up of **asymptomatic nonfunctioning macroadenoma** 6 months after the initial diagnosis and then annually

VIII. Developmental abnormalities of the brain including neuroectodermal dysplasia

IX. Subacute subarachnoid hemorrhage 48 hours after onset (CT is to be used acutely.)

X. Subacute subdural hematoma 48 hours after onset (CT is to be used acutely.)

XI. Subacute intracerebral hematoma or hemorrhage 48 hours after onset (CT is to be used acutely.)

XII. Subacute epidural hematoma 48 hours after onset (CT is to be used acutely.)

XIII. Abrupt onset of a neurologic deficit- including stroke and TIA (MRI of the brain without contrast is preferred.)\(^{25-27}\) [One of the following]
   1. Motor weakness affecting a limb or one side of the face or body
   2. Decreased sensation affecting a limb or one side of the face or body
   3. Acute ataxia (unsteady and clumsy motion of the limbs or trunk)
   4. Mental confusion including memory loss and disorientation
   5. Impaired vision, including amaurosis fugax, visual field loss, and diplopia
   6. Aphasia
   7. Dysarthria (speech disorder resulting from neurological injury)
   8. Dysphagia with no GI cause
   9. Vertigo with either headache or nystagmus
   10. Numbness, tingling, paresthesias
   11. Syncope
   12. Decreased level of consciousness
   13. Papilledema
   14. Stiff neck
   15. Drowsiness
   16. New onset of vomiting
   17. Nystagmus
   18. Cranial nerve palsy
   19. Gait disturbance
   20. Personality or behavioral changes
   21. New seizure
   22. Hearing loss or new onset tinnitus

XIV. Reevaluation after stroke (MRI of the brain without contrast is preferred.) [One of the following]
   A. Deteriorating clinical status with new or worsening neurologic findings
1. Motor weakness affecting a limb or one side of the face or body
2. Decreased sensation affecting a limb or one side of the face or body
3. Acute ataxia (unsteady and clumsy motion of the limbs or trunk)
4. Mental confusion including memory loss and disorientation
5. Impaired vision, including amaurosis fugax, visual field loss, and diplopia
6. Aphasia
7. Dysarthria (speech disorder resulting from neurological injury)
8. Dysphagia with no GI cause
9. Vertigo with either headache or nystagmus
10. Numbness, tingling, paresthesias
11. Syncope
12. Decreased level of consciousness
13. Papilledema
14. Stiff neck
15. Drowsiness
16. New onset of vomiting
17. Nystagmus
18. Cranial nerve palsy
19. Gait disturbance
20. Personality or behavioral changes
21. New seizure
22. Hearing loss or new onset tinnitus
23. Anti-coagulation planned

XV. **Seizure**\(^{28-30}\) [One of the following]
   A. Initial evaluation of new onset of seizures
   B. Known seizure disorder with an increase in seizure activity or are refractory to treatment at adequate dosage
   C. Epilepsy
   D. Suspected neuroectodermal dysplasia
   E. Suspicion of migration anomalies or other morphologic brain abnormalities in children
   F. Suspicion of cortical dysplasia
   G. Complex partial seizure
   H. Atypical seizure disorder
   I. Complex partial seizure
   J. Atypical seizure disorder

XVI. **CNS infection or abscess with evidence of infection and neurologic complaints or findings or follow up of known cerebral infection (MRI without and with contrast is preferred.)**\(^ {31-35}\) [Both A and B for new infection or C for follow up]
   A. Findings suggesting infection [One of the following]
      1. Aural temperature > 38.3°C or 100.9°F
      2. Leukocytosis, WBC >11,500/cu.mm
      3. Known infection elsewhere
      4. Immunocompromised patient
   B. Other clinical findings [One of the following]
1. Headache  
2. Drowsiness or confusion  
3. Focal neurological findings  
4. Vomiting  
5. Seizure  
6. Stiff neck  
7. Photophobia  
8. Recurrence of symptoms after antibiotic therapy  

C. Follow-up during therapy to assess effectiveness and after completion are appropriate

XVII. Brain tumors or metastatic disease to the brain [One of the following] (MRI without and with contrast is strongly recommended.)

A. Clarification of brain mass detected on CT exam or prior non contrast MRI for evaluation of possible pituitary problems

B. Evaluation of known primary brain tumor which may include but not limited to any of the following brain tumors:
   - Astrocytoma
   - Choroid plexus papilloma
   - Ependymoma
   - Glioma
   - Glioblastoma
   - Glioblastoma multiforme
   - Hemangioblastoma
   - Medulloblastoma
   - Meningioma
   - Oligodendroglioma
   1. Interval re-evaluation of known brain tumor [One of the following]
      a. Anaplastic astrocytoma, anaplastic oligodendroglioma or glioblastoma multiforme or, any high grade or aggressive primary brain tumor [One of the following]
         i. Re-image after surgery (complete or subtotal)
         ii. Image 2-6 weeks after completion of radiation therapy
         iii. Following completion of chemotherapy
         iv. Every 60-120 days for 2-3 years if asymptomatic and then every 6 months
         v. New signs and symptoms (see 1 above) regardless of date of last imaging

C. Other primary intracranial cancers if clinically stable may be imaged at completion of treatment for a new baseline and thereafter at 90 to 180 day intervals for 5 years and then at least annually

D. Evaluation for known or suspected brain metastases in patients with known extra cranial malignancy [One of the following]
   1. Routine initial staging for the following [One of the following]
      a. Sarcoma
      b. Melanoma
      c. Small cell lung cancer
      d. Non small cell lung cancer
   2. New neurological signs or symptoms with any other known malignancy [One of the following]
a. Papilledema
b. Vomiting
c. Personality changes
d. Drowsiness
e. Seizure
f. Confusion
g. Memory loss
h. Gait disturbance
i. Paralysis or weakness on half of the body or face
j. Visual changes
k. Cranial nerve palsy (See V below.)
l. Headache
m. Nystagmus
n. Dysarthria
o. Dysphagia
p. Ataxia

3. Follow up known brain metastases after chemotherapy [One of the following]
   a. Follow up after intervention to establish a new baseline
   b. Imaging (preferably MRI) every 3 months for 1 year
   c. After one year imaging is performed based on clinical signs and symptoms
   d. Melanoma stage IIB or higher annually

4. Follow up known brain metastases after whole brain radiation therapy [One of the following]
   a. Follow up after intervention to establish a new baseline
   b. Imaging (preferably MRI) every 3 months for 1 year
   c. After one year imaging is performed based on clinical signs and symptoms
   d. Melanoma stage IIB or higher annually

5. Follow up known brain metastases after stereotactic or cyber knife radiation treatment
   a. Every 6 weeks x 2 then every 12 weeks x2 then every 3-6 months if stable

6. Follow up known brain metastases after surgery [One of the following]
   a. Follow up after intervention to establish a new baseline
   b. Imaging (preferably MRI) every 3 months for 1 year
   c. After one year imaging is performed based on clinical signs and symptoms.
   d. Melanoma stage IIB or higher annually

7. Known brain metastases with new neurological signs or symptoms such as indicated in B2

E. Cranial nerve palsy or tumor (See IV above.)

F. Suspected brain tumor
   1. New onset of neurologic findings [One of the following]
      a. Papilledema
      b. Vomiting
c. Personality changes
d. Drowsiness
e. Seizure
f. Confusion
g. Memory loss
h. Gait disturbance
i. Paralysis or weakness on one side of the body or face
j. Visual changes
k. Cranial nerve palsy (See IV above.)
l. Headache
m. Nystagmus
n. Dysarthria
o. Dysphagia
p. Ataxia

References:


70551, 70552, 70553 MRI of the Brain: Medicare AL, FL, GA, TN

Clinical criteria reviewed/revised: 12/6/12, 5/5/12, 8/23/11, 11/17/10, 12/09, 3/18/09

Medical Advisory Committee reviewed and approved: 12/12/12, 9/19/12, 9/21/11
I. Evaluation of patients with seizures or brain tumors who are candidates for neurosurgical therapy when the results of testing will obviate the need for either the Wada test or direct electrical stimulation.¹-³

References:

71250  CT of the Chest without Contrast
71260  CT of the Chest with Contrast
71270  CT of the Chest without and with Contrast

For cancers not listed below please refer to NCCN guidelines.

I. **Cough with a chest x-ray within the last 4 weeks**\(^1-4\)  [Both]
   A. In addition to the chest x-ray all of the following should be done
      1. Treatment for any finding on CXR failed to relieve cough
      2. No cause for cough suggested by CXR
      3. If (skip section if there is no history of smoking or ACE inhibitor use) [One of the following]
         a. If a smoker, no response to stopping
         b. If applicable the member used ACE inhibitors for high blood pressure with no response to discontinued use
   B. No response to empiric treatment of [All of the following]
      1. Upper airway cough syndrome (UACS preferred terminology; old terminology was post nasal drip) no response to > 1 week of first generation antihistamines and decongestants
      2. GERD [One of the following]
         a. No response to anti-reflux medication
         b. Negative 24 hour esophageal pH monitoring
      3. Asthma, no response to bronchodilators

II. **Hemoptysis**\(^5-8\) [One of the following]
    A. Age 40 or greater and at least a 40 pack year history of smoking
    B. More than a single episode
    C. Massive hemoptysis associated with cardiopulmonary compromise

III. **Vocal cord paralysis or hoarseness**\(^9-11\) [One of the following] (Imaging should not be performed prior to laryngoscopy)
    A. Unexplained vocal cord paralysis found on laryngoscopy
    B. Mass or lesion on the vocal cord found on laryngoscopy
    C. Injury to the recurrent laryngeal nerve [One of the following]
       1. Prior cervical spine surgery
       2. Prior thyroid surgery
       3. Prior esophageal cancer surgery
       4. Prior carotid endarterectomy
       5. Left hilar lung mass
       6. Left pneumonectomy

IV. **Abnormal findings on prior chest imaging**\(^12-27\) [One of the following]
    A. Initial work up of lung nodule or mass on imaging study of the chest [One of the following]
       1. Age >35
       2. Size >3 mm
3. Enlarged compared to prior exam
4. Age <35 with equivocal, eccentric or no calcifications on prior exam
5. Smoker
6. Known malignancy elsewhere
7. Abnormal findings at the lung base on recent CT of the abdomen

B. Follow up of pulmonary nodule [One of the following]

   **General Statements: A linear density is NOT a nodule**

   **Criteria do not apply to patients known to have or suspected of having malignant disease.** Lung nodule follow-up applies only to patients over age 35. In the under 35 population the risk of radiation exposure outweighs risk of cancer. See #3 below. Lung nodule in patient <35 years of age, one low dose CT at 6-12 months.

   Ground glass opacities (non-solid nodules) grow more slowly therefore consideration should be given to extending the follow-up interval and total length of follow-up. These may represent bronchoalveolar carcinoma.

   1. **Asymptomatic patient with no history of malignancy, smoking, exposure to asbestos, uranium, or radon or history of lung cancer in first degree relative** [One of the following]
      a. Nodule <3.9 mm, no follow up CT
      b. Nodule 4-5.9 mm follow up CT 12 months; if no change no additional imaging
      c. Nodule 6-7.9 mm
         i. Follow up CT at 6-12 months
         ii. Follow up CT at 18-24 months if no change on first follow up scan
      d. Nodule >8mm (follow-up same in smoker and non-smoker) [One of the following]
         i. Follow up CT at 3, 9 and 24 months
         ii. Dynamic contrast enhanced CT
         iii. PET
         iv. Biopsy

   2. **Asymptomatic** patient with no history of malignancy but with a history of smoking, exposure to asbestos, uranium, or radon or history of lung cancer in first degree relative [One of the following]
      a. Nodule <3.9 mm follow up at 12 months; if unchanged no further follow up
      b. Nodule 4-5.9 mm
         i. Follow up CT at 6-12 months
         ii. Follow up CT at 18-24 months if no change on first follow up scan
      c. Nodule 6-7.9 mm
         i. Follow up at 3-6 months then
         ii. Follow up at 9-12 months then
         iii. Follow up at 24 months
      d. Nodule >8mm (follow-up same in smoker and non-smoker) [One of the following]
         i. Follow up CT at 3, 9 and 24 months
         ii. Dynamic contrast enhanced CT
         iii. PET
         iv. Biopsy

   3. Lung nodule in patient <35 years of age, one low dose CT at 6-12 months

C. **Atelectasis or mass by CXR** [One of the following]
   1. Entire lung field
   2. Lobar atelectasis >2 days
3. Segmental atelectasis >2 weeks
D. Bleb, bulla or significant emphysema on prior imaging
E. Pneumonia, persistent or recurring [One of the following]
   1. Unimproved after 3 weeks, or not resolved by 8 weeks after antibiotics
   2. Recurrent pneumonia at same site
   3. Immunocompromised host
F. Mediastinal mass or widening
   1. Follow-up examination after at least three months
G. Hilar enlargement which is a new finding on a recent chest x-ray [One of the following]
   1. Follow-up examination after at least three months
   2. Elevated diaphragm
H. Pleural effusion including recurrent effusion and/or pleural thickening [One of the following]
   1. Thoracentesis reveals malignant cells, primary unknown
   2. Exudative pleural effusion
   3. Prior to video assisted thoracoscopic or other surgery or chest tube insertion for loculated effusion
   4. Initial evaluation prior to intervention
   5. Following therapeutic thoracentesis
   6. Clinical suspicion for mesothelioma
I. Lung abscess or cavitating lesion on chest imaging [One of the following]
   1. Not previously imaged
   2. Immunocompromised host
   3. Follow up after >2 weeks of intravenous antibiotics
J. Infiltrate (complicated pneumonia) [One of the following]
   1. No CXR improvement after 4 weeks
   2. No change or worsening of symptoms
      a. Aural temperature of >38.3°C or 100.9°F
      b. Leukocytosis WBC > 11,500/cu mm

V. Suspected pulmonary embolism (PE) (CTA of the chest is the appropriate study, CPT 71275.)

VI. Evaluation of non lung primary for possible metastatic disease to the lungs (also see XXII-XLIV below) and surveillance of asymptomatic individuals with no known metastatic disease [One of the following]
A. Initial staging of primary cancer prior to treatment [One of the following]
   1. Renal cell cancer (kidney)
   2. Breast
   3. Colon
   4. Anal cancer
   5. Cervix
   6. Melanoma
   7. Pure seminoma only necessary if abdominal nodes are positive on abdominal CT scan
   8. Nonseminomatous testicular carcinoma
   9. Lymphoma or Hodgkin’s disease
   10. Soft tissue sarcoma
11. Thymoma
12. Thymic carcinoma
13. Esophagus
14. Head and neck cancer (not thyroid)
15. Ewing’s sarcoma
16. Osteogenic sarcoma
17. Pancreatic cancer
18. Hepatocellular cancer or hepatoma
19. Ovarian cancer
20. Bladder cancer with muscle invasion
21. Uterine leiomyosarcoma
22. Rectal cancer
23. Mesothelioma
24. Bronchoalveolar carcinoid
25. Thymic carcinoid
26. Neuroendocrine tumors
   a. Adrenal gland ACTH independent Cushing’s syndrome and tumor >5cm
   b. Non functioning adrenal tumor >4cm
27. Adrenal carcinoma >6 cm
28. Pheochromocytoma
29. Anaplastic or poorly differentiated or high grade neuroendocrine tumors or small cell carcinoma other than lung
30. Retroperitoneal and/or intra-abdominal sarcoma
31. Desmoid or fibromatoses
32. Chondrosarcoma
33. Gastric cancer or stomach cancer

B. Ongoing evaluation of asymptomatic patients with no known metastatic disease post treatment restaging (also see XXII-XLIV below) [One of the following]
1. Osteogenic or Osteosarcoma [One of the following]
   a. Follow up after treatment for new baseline
   b. Every 3 months for 1-2 years then
   c. Every 4 months for the next year then
   d. Every 6 months for the next 2 years
2. Chondrosarcoma [One of the following]
   a. Low grade
      i. Follow up after treatment for new baseline
      ii. Every 6-12 months for 2 years then annually
   b. High grade
      i. Follow up after treatment for new baseline
      ii. Every 3-6 months for 5 years then annually for at least 10 years
3. Ewing's sarcoma [One of the following]
   a. Restaging after chemotherapy, surgery or radiation then
   b. Every 2-3 months for a year then
   c. Every 6-12 months for the next 4 years then annually
4. Soft tissue sarcomas [One of the following]
   a. Extremity and trunk [One of the following]
      i. Follow up
01. Follow up after treatment for new baseline
02. Every 6-12 months for stage 1 disease then
03. Every 3-6 months for 2-3 years then every 6 months for next 2 years then annually for stage II or higher disease, or non-resectable primary or stage IV disease
b. Retroperitoneal/intra-abdominal (includes GIST, desmoid, aggressive fibromatosis and other sarcomas)
   i. Follow up [One of the following]
      01. Follow up after treatment for new baseline
      02. Every 3-6 months for 2-3 years (for GIST tumor every 3-6 months for 3-5 years) then
      03. Every 6 months for next 2 years then
      04. Annually after 4-5 years
5. Colorectal cancer (including anal cancer)—routine CT scans are not recommended beyond 5 years (PET/CT is not recommended) [One of the following]
   a. Follow up after treatment for new baseline
   b. Annually for 3-5 years with node negative disease then
   c. Stage IV disease every 3-6 months for 2 years then every 6-12 months for a total of 5 years
6. Pure seminoma [One of the following]
   a. Any change on a chest x-ray then
   b. Stage IIB-III after completion of chemotherapy
7. Hodgkin’s disease [One of the following]
   a. After treatment with radiation therapy restage with either CT or PET/CT if last PET scan was positive then
   b. Follow up 3 months after completion of radiation therapy treatment then
   c. Scan every 6-12 months for 2-5 years then
   d. Annual scan if there is increased risk for lung cancer (This is optional if none of the factors below are present.) [One of the following]
      i. Treatment with radiation therapy
      ii. Treatment with non-alkylating agent chemotherapy
      iii. Smoking history
8. Follicular, MALT, nodal marginal cell, mantle cell lymphoma, Burkitt’s lymphoma, large B-cell lymphoma
   a. Asymptomatic with no signs or symptoms of disease
      i. Follow up after treatment for new baseline
      ii. Not more frequently than every 6 months for the first 2 years and not more frequently than annually thereafter
9. Renal cell cancer or kidney cancer
   a. 2-6 months after completing therapy
10. Known thymoma or thymic carcinoma [One of the following]
    a. Follow up after treatment for new baseline
    b. Annual scan
    c. Any change in chest x-ray
11. Head and neck cancer including mucosal melanoma
    a. Oropharynx, hypopharynx, occult primary
       i. Chest CT as clinically indicated
12. Uterine sarcoma
   a. Every 6-12 months for 5 years

13. Bladder cancer
   a. Every 3-6 months for 2 years

14. Melanoma
   a. Stage IIB-IV every 6-12 months chest CT and/or PET/CT

15. Bronchopulmonary carcinoid or thymic carcinoid [One of the following]
   a. Initial staging then
   b. 3-12 months after resection then
   c. 6-12 months starting 1 year after resection

16. Esophageal cancer
   a. Follow up after treatment for new baseline
   b. Prior to chemoradiation (not needed if PET/CT is done)

17. Retroperitoneal and/or intra-abdominal sarcoma (including desmoid tumors and fibromatoses)
   a. Follow up after treatment for new baseline
   b. Every 3-6 months for 2-3 years then annually

C. Any known malignancy with change in signs or symptoms of the chest or change in the chest x-ray [One of the following]
   1. New or worsening findings on CXR
   2. Horner's syndrome
   3. Hypercalcemia
   4. Rising tumor markers with any known cancer [One of the following]
      a. CEA >2.5 in non smokers
      b. CEA > 5.0 in smokers
      c. CA-125> 11U/mL
      d. AFP >6.6ng/mL
      e. CA19-9 >35 U/mL
      f. CA 27.29 > 38 U/mL
      g. PSA > 4

5. Chylothorax
6. Superior vena cava syndrome
7. Weight loss of 10 pounds or more
8. Hoarseness
9. Hemothysis
10. Dysphagia
11. Recurrent pulmonary infections
12. Compromised airway
13. New or changed cough

VII. Known primary lung cancer or known metastatic disease to the lung from any primary (see also XXII-XLIV below) [One of the following]
A. Lung cancer [One of the following]
   1. Initial staging
   2. Following surgery or adjuvant treatment re-evaluation is with PET/CT for both small cell and non small cell lung cancer
3. Surveillance (PET or PET/CT and brain MRI not indicated for routine surveillance) [One of the following]
   a. Non small cell lung cancer [One of the following]
      i. Every 6-12 months for 2 years then
      ii. Annually
   b. Small cell lung cancer [One of the following]
      i. Every 3-4 months for 2 years then
      ii. Every 6 months for years 3-6 then
      iii. Annually after the 5th year
4. Rising CEA (non smokers > 2.5 and smokers > 5.0)
5. Unresectable disease [One of the following]
   a. Initial staging
   b. Establish new baseline at the completion of therapy (chemotherapy or radiation therapy)
   c. Change in the chest x-ray
   d. New symptoms [One of the following]
      i. New onset hemoptysis
      ii. New onset cough
      iii. New onset chest pain
      iv. Other symptoms related to the chest
   v. Rising tumor markers [One of the following]
      01. CEA >2.5 in non smokers
      02. CEA > 5.0 in smokers
      vi. Hoarseness
      vii. Shortness of breath
      viii. Weight loss
B. Evaluation for possible resection of known metastases
C. New symptoms, findings or deteriorating clinical situation for any known cancer [One of the following]
   1. New or worsening findings on CXR
   2. Horner's syndrome
   3. Hypercalcemia
   4. Rising tumor markers with any known cancer [One of the following]
      a. CEA >2.5 in non smokers
      b. CEA > 5.0 in smokers
      c. CA-125> 16U/mL
      d. AFP >6.6ng/mL
      e. CA19-9 >35 U/mL
      f. CA 27.29 > 38 U/mL
      g. PSA >4
5. Chylothorax
6. Superior vena cava syndrome
7. Weight loss of 10 pounds or more
8. Hoarseness
9. Hemoptysis
10. Dysphagia
11. Recurrent pulmonary infections
12. Compromised airway
13. Cough

D. Melanoma [One of the following]
   1. Repeat after surgical resection of metastatic disease then
   2. Every 6-12 months for 5 years

E. Colon cancer [One of the following]
   1. With known metastatic disease CT of the chest every 3-6 months for 2 years then every 6 months for 3-5 years
   2. Rising CEA (non smoker >2.5; smoker > 5.0)
      a. Initial CT evaluation negative despite rising tumor markers then repeat CT chest in 3 months

F. Breast cancer [One of the following]
   1. Recurrence of disease
   2. Known metastatic disease [One of the following]
      a. Change in chest x-ray
      b. New or worsening symptoms in the chest
      c. Weight loss
      d. Findings of any new sites of metastatic disease
      e. Increasing tumor markers such as CEA (must be >2.5 in non smokers or >5.0 in smokers), CA15-3, CA27.29 (> 38 U/mL)
      f. New areas of abnormality on a bone scan
      g. Monitoring with new therapy [One of the following]
         i. Baseline prior to starting new treatment
         ii. Chemotherapy - prior to each cycle
         iii. Endocrine therapy - every 2-3 months
         iv. Restaging if objective concern for progression of disease

G. Bladder cancer
   1. Documented recurrence of disease

VIII. Syndrome of inappropriate ADH (SIADH) [All] 74, 75
   A. Decreased serum sodium (<125 mmol/l)
   B. Elevated ADH
   C. Dilute plasma osmolality

IX. Interstitial lung disease76-80 (pulmonary fibrosis) and pulmonary function tests showing a restrictive pattern [One of the following]
   A. Dyspnea
   B. Persistent nonproductive cough
   C. Hemoptysis
   D. Other associated diseases such as but not limited to one of the following
      1. Sarcoidosis
      2. Collagen vascular diseases such as but not limited to [One of the following]
         a. Scleroderma
         b. Dermatomyositis
         c. SLE (lupus)
         d. Rheumatoid arthritis
e. Polymyositis
f. Sjögren’s syndrome
g. Mixed connective tissue disease
3. Tuberous sclerosis
4. Wegener’s granulomatosis
5. Bronchiolitis obliterans organizing pneumonia (BOOP)
6. Occupational exposure [One of the following]
   a. Asbestosis
   b. Silicosis
7. Immunocompromised individual
E. Drug related diseases [One of the following]
   1. Amiodarone
   2. Adalimumab
   3. Azathioprine
   4. BCNU
   5. Bleomycin
   6. Busulfan
   7. Cholorambucil
   8. Cyclophosphamide
   9. Etanercept
   10. Fludarabine
   11. Gold
   12. INF alfa
   13. INF beta
   14. Infliximab
   15. Methotrexate
   16. Methysergide
   17. Mexiletine
   18. Mitomycin C
   19. Nitrofurantoin
   20. Paclitaxel
   21. Penicillamine
   22. Phenytoin
   23. Rituximab
   24. Sirolimus
   25. Sulfasalazine
   26. Amphotericin
F. Interstitial infiltrate on chest x-ray

X. Suspected or known dissection of the aorta [One of the following]81-86 (CTA preferred)
   A. Unequal blood pressure in the arms
   B. Rapid onset of “ripping, tearing, searing, or sharp” severe chest or upper back or abdominal pain
   C. Syncope and chest pain
   D. Shortness of breath
E. CVA or stroke
F. Loss of pulses
G. Aortic insufficiency murmur
H. Follow up of known dissection [One of the following]
   1. 1 month after repair then
   2. 3 months after repair then
   3. 6 months after repair then
   4. 12 months after repair then
   5. Annually after 12 months
I. New symptoms after repair [One of the following]
   1. Unequal blood pressure in the arms
   2. Rapid onset of “ripping, tearing, searing, or sharp” severe chest or upper back or abdominal pain
   3. Syncope and chest pain
   4. Shortness of breath
   5. CVA or stroke
   6. Loss of pulses
   7. Aortic insufficiency murmur

XI. Thoracic or thoracoabdominal aneurysm [One of the following] 87-93 (CTA preferred)
A. Patient with Marfan’s or Ehlers-Danlos syndrome
B. Turner’s syndrome
C. Asymptomatic patient with [One of the following]
   1. Ascending aorta with diameter >3.7cm
   2. Aortic arch and/or descending aorta with diameter >3.5 cm
   3. Any segment dilated to twice the adjacent normal diameter
   4. Bicuspid aortic valve on echocardiogram
D. Known thoracic or thoracoabdominal aneurysm demonstrated on prior CT, CTA, MRI, MRA or ultrasound [One of the following]
   1. Asymptomatic [One of the following]
      a. Follow up scan 6 months after initial diagnosis then
      b. If no change on the 6 month follow up scan then once every 12 months unless symptoms develop
   2. Symptoms [One of the following]
      a. Chest pain
      b. Aortic insufficiency, new diastolic murmur
      c. Superior vena cava compression
      d. Left vocal cord paralysis
E. Preoperative planning for endovascular or surgical repair (stent graft)
F. Postoperative evaluation following endovascular repair (stent graft) [One of the following]
   1. 1 month after repair then
   2. 3 months after repair then
   3. 6 months after repair then
   4. 12 months after repair then
   5. Suspicion of endoleak
XII. Chest trauma [One of the following] (If vascular injury is of concern then CTA of the chest, 71275, is recommended.)\(^94,95\)
   A. Abnormal appearance of aorta or mediastinum on chest x-ray or
   B. Suspected sternal fracture not demonstrated on x-ray

XIII. Prior to video assisted thoracoscopic surgery (VATS) for treatment of recurrent pneumothorax, pleural effusions, etc.\(^96,97\)

XIV. Thymoma or suspected or known myasthenia gravis [Clinical and lab results or follow-up] \(^50,98-101\)
   A. Clinical [One of the following]
      1. Ptosis or drooping of the eyelid(s)
      2. Diplopia or double vision
      3. Flattening of the smile
      4. Nasal speech
      5. Difficulty chewing or swallowing
      6. Facial paresis
      7. Proximal limb weakness
      8. Cough
      9. Chest pain
     10. Superior vena cava syndrome
     11. Dysphagia
     12. Hoarseness
     13. New anterior mediastinal mass on recent chest x-ray (may be asymptomatic)
     14. Paraneoplastic syndrome [One of the following]
        a. Pure red cell aplasia
        b. Hypogammaglobulinemia
        c. Pure white cell aplasia
        d. Multi organ autoimmunity
   B. Laboratory tests [One of the following]
      1. Positive anti-acetylcholine receptor (anti-AchR) antibodies
      2. Positive MuSK antibody assay
      3. Antistriational (anti-titin and anti-ryanodine) receptor antibody assays
   C. Follow up after treatment [One of the following]
      1. Follow up after treatment for new baseline
      2. Annual CT scan if stable
      3. Change in recent chest x-ray
      4. New signs or symptoms [One of the following]
         a. Ptosis or drooping of the eyelid(s)
         b. Diplopia or double vision
         c. Flattening of the smile
         d. Nasal speech
         e. Difficulty chewing or swallowing
         f. Facial paresis
         g. Proximal limb weakness
         h. Cough
i. Chest pain
j. Superior vena cava syndrome
k. Dysphagia
l. Hoarseness

XV. **Suspected bronchiectasis [One of the following]** 102, 103

A. Clinical findings [One of the following]
   1. Cough
   2. Daily production of mucopurulent and tenacious sputum
   3. Hemothysis
   4. Dyspnea
   5. Wheezing or crackles
   6. Pleuritic chest pain
   7. Digital clubbing

B. Bronchiectasis on prior CXR
C. History of cystic fibrosis
D. Primary ciliary dyskinesia
E. Known alpha 1-antitrypsin deficiency (AAT)

XVI. **Cystic fibrosis [One of the following]**

A. Hemothysis
B. Respiratory distress
C. Spontaneous pneumothorax
D. Acute onset chest pain
E. Inspiratory rales or crackles
F. Bronchiectasis
G. Chronic or recurrent respiratory infections

XVII. **Paraneoplastic syndrome suspicious for lung cancer [One of the following]** 74, 75

A. SIADH (syndrome of inappropriate ADH)
   1. Decreased serum sodium (less than 125 mmol/l)

B. Hypercalcemia
C. Carcinoid syndrome
D. Glomerulonephritis
E. Thrombophlebitis

XVIII. **Fever of unknown origin (FUO)** 104, 105 with documented aural temperature of >38.3°C or >100.9°F on several occasions over 3 weeks (CT scans for this indication have a low yield in general and CT of the chest is generally not recommended.) [One of the following]

A. Uncertain diagnosis after lab studies [All]
   1. Two blood cultures which are not diagnostic
   2. Urine culture not diagnostic
   3. Tuberculin skin test
   4. HIV antibody assay and HIV viral load for patients at high risk
5. Negative chest x-ray
B. Night sweats

XIX. Scleroderma (progressive systemic sclerosis) 106, 107 [One of the following]
A. Diagnosis of scleroderma [One of the following]
   1. Asymptomatic [One of the following]
      a. Every 6 months for 5 years after diagnosis then
      b. Annually after 5 years
   2. Symptomatic

XX. Soft tissue mass of the chest wall108
A. Chest x-ray

XXI. Weight loss of 5% of total body weight or 10 pounds or more109, 110 (Note that CT scans for this indication have a low yield.) [One of the following]
A. Negative colonoscopy
B. Chest x-ray nondiagnostic for cause of weight loss
C. Normal thyroid function tests (TSH, T3 and T4)
D. Normal renal function tests (BUN and creatinine)

XXII. Pure seminoma70 [One of the following]
A. Initial staging if positive abdominal CT or an abnormal chest x-ray
B. Any change on a chest x-ray
C. Stage IIB-III after completion of chemotherapy

XXIII. Non seminoma testicular malignancy70 [One of the following]
A. Initial staging
B. Change in chest x-ray
C. NCCN does not recommend routine CT scan of the chest for early stage individuals being managed with surveillance only a chest x-ray is recommended

XXIV. Thymic carcinoma50 [One of the following]
A. Initial staging
B. Annual CT of the chest after treatment
C. Any change on chest x-ray

XXV. Uterine sarcoma or leiomyosarcoma71 [One of the following]
A. Following treatment every 6-12 months for 5 years

XXVI. Colon and/or rectal cancer and/or anal cancer53, 54, 73 [One of the following]
A. Initial staging
B. Follow up after treatment for new baseline
C. Follow-up (Routine CT scans are not recommended beyond 5 years.) [One of the following]
   1. Annually for 3-5 years with node negative disease
   2. Stage IV disease every 3-6 months for 2 years then every 6-12 months for a total of 5 years
XXVII. Bone cancers (including osteogenic sarcoma, Ewing’s sarcoma and chondrosarcoma)  \(^{51}\) [One of the following]
   A. Osteogenic or osteosarcoma [One of the following]
      1. Initial staging then
      2. Follow up after treatment for new baseline
      3. Every 3 months for 1-2 years then
      4. Every 4 months for the next year then
      5. Every 6 months for the next 2 years
   B. Chondrosarcoma [One of the following]
      1. Initial staging
      2. Follow up after treatment for new baseline
      3. Low grade
         a. Every 6-12 months for 2 years then annually
      4. High grade
         a. Every 3-6 months for 5 years then annually for at least 10 years
   C. Ewing’s sarcoma [One of the following]
      1. Initial staging then
      2. Restaging after chemotherapy then
      3. Every 2-3 months for a year then
      4. Every 6-12 months for the next 4 years then annually

XXVIII. Melanoma  \(^{60}\) [One of the following]
   A. Initial staging in addition to PET/CT
   B. Any change in chest x-ray
   C. Stage IIB–IV with no evidence of disease Chest CT and/or PET/CT every 6-12 months

XXIX. Breast cancer  \(^{52}\) [One of the following]
   A. Initial staging
   B. Any evidence of breast cancer recurrence
   C. Known metastatic disease [One of the following]
      1. Change in chest x-ray
      2. New or worsening symptoms in the chest
      3. Unexplained weight loss
      4. Findings of any new sites of metastatic disease
      5. Increasing tumor markers such as CEA (must be >2.5 in non smokers or >5.0 in smokers), CA15-3, CA27.29 (> 38 U/mL)
      6. New areas of abnormality on a bone scan
      7. Monitoring with new therapy [One of the following]
         a. Baseline prior to starting new treatment
         b. Chemotherapy – prior to each cycle
         c. Endocrine therapy – every 2-3 months
         d. Restaging if objective concern for progression of disease

XXX. Bladder cancer  \(^{66}\) [One of the following]
   A. Initial work up if there is muscle invasion
   B. Every 3-6 months for 2 years
XXXI. Esophageal cancer

- Initial staging
- Follow up after treatment for new baseline
- Prior to chemoradiation only if PET/CT is not done or planned

XXXII. Gastric cancer

- Initial staging
- Restaging at completion of treatment

XXXIII. Head and neck cancer (This does not include thyroid or parathyroid cancers.)

- Initial staging
  - Lip cancer
  - Cancer of the oral cavity
  - Cancer of the oropharynx
  - Cancer of the hypopharynx
  - Cancer of the nasopharynx
  - Cancer of the glottis
  - Cancer of the supraglottic larynx
  - Ethmoid sinus tumor
  - Maxillary sinus tumor
  - Occult head and neck cancer
  - Salivary gland cancer
  - Mucosal melanoma
- Follow up for all head and neck malignancies
  - As clinically indicated

XXXIV. Hepatoma or hepatocellular carcinoma

- Initial staging after the diagnosis is confirmed by biopsy including those hepatomas found incidentally on pathologic review of a biopsy performed for other reasons

XXXV. Gallbladder cancer

- Gallbladder mass on any imaging for initial staging

XXXVI. Cholangiocarcinoma

- Isolated intrahepatic mass with biopsy proven adenocarcinoma

XXXVII. Hodgkin's lymphoma

- Initial staging including CNS lymphoma (A separate diagnostic CT is not medically necessary if it was done as part of the PET/CT.) then
- Restaging while on treatment should be done with PET/CT then
- After treatment with radiation therapy restage with either CT or PET/CT if last PET scan was positive then
- Follow up 3 months after completion of radiation therapy treatment then
- Scan every 6-12 months for 2-5 years then
F. Annual scan if there is increased risk for lung cancer (This is optional if none of the factors below are present.) [One of the following]
   1. Treatment with radiation therapy
   2. Treatment with non-alkylating agent chemotherapy
   3. Smoking history

XXXVIII. Renal cell or kidney carcinoma58 [One of the following]
   A. Initial staging
   B. 2-6 months after completion of therapy

XXXIX. Malignant pleural mesothelioma59 [One of the following]
   A. Initial staging
   B. Following induction chemotherapy

XL. Neuroendocrine tumors62 [One of the following]
   A. Bronchopulmonary carcinoid or thymic carcinoid
      1. Initial staging then
      2. Follow up after treatment for new baseline
      3. 3-12 months after resection then
      4. 6-12 months starting 1 year after resection
   B. Pheochromocytoma/paraganglioma
      1. Initial staging

XLI. Ovarian cancer64 [One of the following]
   A. Initial staging
   B. Surveillance or follow up stage I-IV
      1. As clinically indicated
   C. Recurrent disease
      1. Restaging to determine extent of disease

XLII. Non-Hodgkin’s lymphoma63 (Follicular lymphoma, marginal zone lymphoma, MALT lymphoma, mantle cell lymphoma, diffuse large B-cell lymphoma, Burkitt’s lymphoma, peripheral T-cell lymphoma, mycosis fungoides, hairy cell leukemia, post-transplant lymphoproliferative disorders, CLL/SLL) [One of the following]
   A. Initial staging in addition to PET/CT
   B. Follow up after treatment for new baseline
   C. Surveillance
      1. Not more frequently than every 6 months for the first 2 years and not more frequently than annually thereafter

XLIII. Pancreatic cancer68
   A. Initial staging

XLIV. Soft tissue sarcoma69 [One of the following]
   A. Extremity and trunk
1. Initial staging then
2. Follow up then
   a. Every 6-12 months for stage 1 disease then
   b. Every 3-6 months for 2-3 years then every 6 months for next 2 years then annually for stage II or higher disease, or non resectable primary or stage IV disease

B. Retroperitoneal/intra-abdominal (includes GIST, desmoid, aggressive fibromatosis and other sarcomas) [One of the following]
   1. Initial staging
   2. Follow up
   3. Every 3-6 months for 2-3 years (for GIST tumor every 3-6 months for 3-5 years)
   4. Every 6 months for next 2 years
   5. Annually after 4-5 years

XLV. Cervical cancer G7 [One of the following]
   A. Initial workup
   B. Post op if para aortic nodes positive and not done prior to surgery
   C. Surveillance imaging
      1. Chest imaging (x-ray or CT) annually for 5 years

XLVI. Lung cancer screening for smokers 111 [One of the following]
   A. Age 55-74 must have 30 pack year history of smoking and either continue to smoke or have quit within the past 15 years annually
   B. Older than 50 and have more than a 20 pack year history of smoking and one of the following
      1. High radon exposure
      2. Occupational exposure to either silica, cadmium, asbestos, arsenic, beryllium, chromium, diesel fumes or nickel
      3. Personal history of lung cancer, lymphoma, head and neck cancer
      4. Family history of lung cancer
      5. Personal history of COPD or pulmonary fibrosis

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71250, 71260, 71270 CT of the Chest

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Medical Advisory Committee reviewed and approved: 9/19/12, 6/27/12, 9/21/11
71275  CTA Chest

I.  Known or suspected pulmonary embolism\(^1\text{-}^3\)
   A. Clinical findings [One of the following]
      1. Sudden onset of dyspnea
      2. Pleuritic chest pain
      3. Cough
      4. Hemoptysis
      5. Tachypnea
      6. Known DVT by sonography
      7. Known malignancy
      8. Unilateral leg swelling
      9. Recent surgery
     10. Recent immobilization of lower extremity

II.  Developmental anomalies of the thoracic vasculature for initial evaluation, treatment planning and post-operative evaluation (MRI or MRA is preferred unless contraindicated. The contraindication must be documented) [One of the following]\(^4\text{-}^7\)
   A. Coarctation of the aorta
   B. Right-sided aortic arch
   C. Truncus arteriosus
   D. Persistent left superior vena cava
   E. Interrupted inferior vena cava
   F. Total anomalous pulmonary venous return
   G. Pulmonary artery atresia
   H. Pulmonary artery hypoplasia
   I. Bicuspid aortic valve
   J. Patent ductus
   K. Tetralogy of Fallot
   L. ASD
   M. Ebstein's anomaly
   N. Corrected transposition of the great vessels
   O. Sinus of Valsalva aneurysm
   P. Coronary artery anomalies
   Q. VSD
   R. Other known or suspected congenital anomalies of the heart

III.  Suspected or known dissection of the aorta [One of the following]\(^8\text{-}^14\)
   A. Unequal blood pressure in the arms
   B. Rapid onset of “ripping, tearing, searing, or sharp” severe chest or upper back or abdominal pain
   C. Syncope and chest pain
D. Shortness of breath
E. CVA or stroke
F. Loss of pulses
G. Aortic insufficiency murmur
H. Marfan’s syndrome
I. Known aortic valve disease
J. Follow up of known dissection [One of the following]
   1. 1 month after repair
   2. 3 months after repair
   3. 6 months after repair
   4. 12 months after repair
   5. Annually after 12 months
K. New symptoms after repair [One of the following]
   1. Unequal blood pressure in the arms
   2. Rapid onset of “ripping, tearing, searing, or sharp” severe chest or upper back or abdominal pain
   3. Syncope and chest pain
   4. Shortness of breath
   5. CVA or stroke
   6. Loss of pulses
   7. Aortic insufficiency murmur

IV. Aneurysm of the thoracic aorta or thoracoabdominal aneurysm [One of the following]¹²,¹⁵-²⁰
A. Patient with Marfan or Ehlers-Danlos syndrome
B. Turner’s syndrome if initial imaging is normal and there are no risk factors for aortic dissection repeat imaging every 5-10 years
C. Asymptomatic patient with [One of the following]
   1. Ascending aorta with diameter > 3.7 cm
   2. Aortic arch and/or descending aorta with diameter > 3.5 cm by chest x-ray
   3. Any segment dilated to twice the adjacent normal diameter
   4. Bicuspid aortic valve on echocardiogram
   5. First degree relative with thoracic aneurysm and/or dissection
D. Known thoracic or thoracoabdominal aneurysm demonstrated by CT, CTA, MRI, MRA or ultrasound [1 or 2]
   1. Asymptomatic
      a. Follow up scan 6 months after initial diagnosis
      b. If no change on the 6 month follow up scan then once every 12 months unless symptoms develop or the aneurysm has increased in size
      c. Marfan’s syndrome annual screening
      d. Marfan’s syndrome with aortic diameter of 4.5 cm or more or there has been growth in the aneurysm imaging should be performed more frequently than once every 12 months
   2. Symptoms [One of the following]
      a. Chest pain
      b. Aortic insufficiency, new diastolic murmur
c. Superior vena cava compression
d. Left vocal cord paralysis
E. Preoperative planning for endovascular repair (stent graft)
F. Postoperative evaluation following endovascular repair (stent graft) [One of the following]
   1. 1 month after repair
   2. 3 months after repair
   3. 6 months after repair
   4. 12 months after repair
   5. Annually thereafter
   6. Suspicion of endoleak

V. Assess thoracic venous structures\textsuperscript{21-25} [One of the following]
A. Superior vena cava syndrome [One of the following]
   1. Physical findings [One of the following]
      a. Swelling, edema or cyanosis of body cranial to heart level
         i. Face
         ii. Arms
         iii. Neck
      b. Dilated anterior chest wall veins and/or collateral veins
      c. Cerebral and laryngeal edema
   2. Neurologic symptoms [One of the following]
      a. Headache
      b. Dizziness, stupor or syncope
      c. Visual disturbances
   3. Bending over or lying down accentuates symptoms
B. Mapping for venous access
C. Pulmonary vein ablation [One of the following]
   1. Atrial fibrillation
   2. Suspicion of pulmonary vein stenosis after ablation
D. Evaluation of pulmonary vein anomalies

VI. Pulmonary vein mapping [One of the following]\textsuperscript{21,22}
A. Planned radiofrequency ablation for treatment of atrial fibrillation
B. Following radiofrequency ablation if there is a suspicion of venous stenosis

VII. Assessment of suspected pulmonary arteriovenous malformation [One of the following]\textsuperscript{26}
A. Screening with family history of Hereditary Hemorrhagic Telangiectasia (HHT)
B. Findings on prior imaging suggestive of pulmonary avm
C. Personal history of HHT (MRA preferred if multiple procedures over time are anticipated)

VIII. Trauma\textsuperscript{27} [One of the following]
A. Chest pain
B. Chest x-ray demonstrating abnormal mediastinal or aortic contour
C. History of deceleration injury
References:


I. Lung cancer and other neoplasms of the lung\textsuperscript{1,2} (CT is strongly preferred and MRI should only be used if CT absolutely cannot be performed.)

A. Lung cancer [One of the following]
   1. Initial staging
   2. Following surgery and adjuvant treatment re-evaluation is with PET/CT for both small-cell and non-small cell lung cancer
      a. For small-cell cancer imaging of the brain MRI (preferred) or CT should be done if prophylactic cranial irradiation is to be given.
   3. Surveillance [One of the following]
      a. Non-small cell lung cancer [One of the following]
         i. Every 6-12 months for 2 years
         ii. After 2 years CT scan annually
         iii. PET or PET/CT and brain MRI not indicated for routine surveillance
      b. Small cell lung cancer [One of the following]
         i. Every 3-4 months for 2 years
         ii. Every 6 months for years 3-6
         iii. Annually after the 5th year
   4. Rising tumor markers
      a. CEA > 2.5 in non smokers
      b. CEA > 5.0 in smokers
   5. Unresectable disease [One of the following]
      a. Initial staging
      b. Establish new baseline at the completion of therapy (chemotherapy or radiation therapy)
      c. Change in the chest x-ray
      d. New symptoms [One of the following]
         i. New onset hemoptysis
         ii. New onset cough
         iii. New onset chest pain
         iv. Other symptoms related to the chest
         v. Rising tumor markers
            01. CEA > 2.5 in non smokers
            02. CEA > 5.0 in smokers
         vi. Hoarseness
         vii. Shortness of breath
         viii. Weight loss of 10 pounds or more
   B. Evaluation for possible resection of known metastases
   C. New symptoms, findings or deteriorating clinical situation for any known cancer [One of the following]
1. New or worsening findings on CXR
2. Horner’s syndrome
3. Hypercalcemia
4. Rising tumor markers with any known cancer [One of the following]
   a. CEA >2.5 in non smokers
   b. CEA > 5.0 in smokers
   c. CA-125> 16U/mL
   d. AFP >6.6ng/mL
   e. CA19-9 >35 U/mL
   f. CA 27.29 > 38 U/mL
   g. PSA >4
5. Elevated hemidiaphragm
6. Chylothorax
7. Superior vena cava syndrome
8. Weight loss of 10 pounds or more
9. Chest pain
10. Hoarseness
11. Hemoptysis
12. Dysphagia
13. Recurrent pulmonary infections
14. Compromised airway
15. Cough

II. Mediastinum [One of the following]¹⁻³⁻⁵ (CT of the chest should be performed unless there is a definite contraindication.)

   A. Hilar enlargement with non-diagnostic CT
   B. Pericardial or cardiac mass by prior imaging
      1. Primary cardiac masses [One of the following]
         a. Prior abnormal heart contour on chest x-ray
         b. Prior abnormal echocardiogram
      2. Heart failure or peripheral embolization of unknown etiology
   C. Suspected superior vena cava obstruction (CT or CTA of the chest is strongly preferred.) [One of the following]
      1. Edema of head and neck
      2. Dilated collateral veins on torso
      3. Cyanosis
   D. Headache and confusion
   E. Mediastinal mass or widening suspected on prior imaging or clinical grounds (CT of the chest is preferred.) [One of the following]
      1. Spinal cord compressive syndrome
      2. Vena caval obstruction
      3. Pericardial tamponade
      4. Congestive heart failure
      5. Dysrhythmias
      6. Pulmonary stenosis
      7. Tracheal compression
8. Esophageal compression
9. Vocal cord paralysis
10. Horner’s syndrome
11. Phrenic nerve paralysis
12. Chylothorax
13. Chylopericardium
14. Pancoast’s syndrome
15. Postobstructive pneumonitis

III. **Great vessels [One of the following]^{6-9}**
   A. Anomalies of the aortic arch [One of the following]
      1. Abnormal mediastinal contour on chest x-ray
      2. Abnormal echocardiogram
   B. Monitoring the aorta in Marfan syndrome and annuloaortic ectasia
   C. Establishing the source of peripheral embolization [One of the following]
      1. Cyanosis of a single extremity or part of an extremity
      2. Abdominal angina
      3. Stroke or TIA
   D. Diagnosis and assessment of the severity of coarctation, including post-angioplasty evaluation
   E. Diagnosis of periaortic abscess or infectious pseudoaneurysm in bacterial endocarditis of the aortic valve
   F. Assessment of the origin and proximal parts of the great vessels for possible causes of cerebrovascular disease
      1. History of stroke or TIA
   G. Intramural hematoma
   H. Aortitis [One of the following]
      1. Upper extremity claudication
      2. Stroke
      3. Transient cerebral ischemia
      4. Dizziness or syncope
      5. Subclavian steal
      6. Retinopathy
      7. Raynaud’s phenomenon
      8. Hypertension, sometimes malignant
   I. Suspected thoracic aortic dissection (See indication VI below.)
   J. Thoracic or thoracoabdominal aneurysm (See VII below.)

IV. **Pleura [One of the following]^{10} (CT is preferred.)**
   A. Tumor [One of the following]
      1. To determine if pleural lesions detected on other examinations are benign or malignant (metastases are most common)
      2. Mesothelioma
         a. To determine extent of tumor
   B. To evaluate pleural fluid in high risk patients (CT is strongly preferred.)

V. **Brachial plexus (MRI with contrast is preferred.) [One of the following]^{11-16}**
A. Brachial plexus injury [Both]
   1. Symptoms [One of the following]
      a. Weakness or paralysis of the upper extremity
      b. Sensory loss or numbness of the upper extremity
      c. Horner’s syndrome
      d. Shoulder and/or arm pain
      e. Burning or electric sensation in more than one nerve distribution
      f. Loss of deep tendon reflexes in the upper extremity
      g. EMG showing a neurogenic lesion in muscles supplied by at least 2 cervical levels
   2. History [One of the following]
      a. Trauma including birth trauma
      b. Radiation fibrosis
      c. History of radiation therapy to the chest, breast or axilla
      d. Weakness of the shoulder and/or arm

B. Primary or metastatic tumor [Both]
   1. Symptoms [One of the following]
      a. Weakness or paralysis of the upper extremity
      b. Sensory loss or numbness of the upper extremity
      c. Horner’s syndrome
      d. Shoulder and/or arm pain
      e. Burning or electric sensation in more than one nerve distribution
      f. Loss of deep tendon reflexes in the upper extremity
      g. EMG showing a neurogenic lesion in muscles supplied by at least 2 cervical levels
   2. History [One of the following]
      a. Known primary tumor
      b. Lung cancer especially a Pancoast tumor
      c. Lymphoma

C. Schwannoma or neurofibroma
   1. Symptoms [One of the following]
      a. Palpable mass in the lower neck or supraclavicular fossa
      b. Weakness or paralysis of the upper extremity
      c. Sensory loss or numbness in the upper extremity
      d. Horner’s syndrome
      e. Shoulder and/or arm pain
      f. Burning or electric sensation in more than one nerve distribution
      g. Loss of deep tendon reflexes in the upper extremity
      h. EMG showing a neurogenic lesion in muscles supplied by at least 2 cervical levels

D. Entrapment

E. Symptoms [One of the following]
   1. Pain and paresthesia along the ulna aspect of the forearm, hand and 4th and 5th fingers
   2. Symptoms increase with overhead activities

VI. Suspected dissection of the thoracic aorta\textsuperscript{6,17-22} (CTA is strongly preferred.)
   [One of the following]
   A. Unequal blood pressure in the arms
B. Rapid onset of “ripping, tearing, searing, or sharp” severe chest or upper back or abdominal pain
C. Syncope and chest pain
D. Shortness of breath
E. CVA or stroke
F. Loss of pulses
G. Aortic insufficiency murmur
H. Follow up of known dissection [One of the following]
   1. 1 month after repair
   2. 3 months after repair
   3. 6 months after repair
   4. 12 months after repair
   5. Annually after 12 months
I. New symptoms after repair [One of the following]
   1. Unequal blood pressure in the arms
   2. Rapid onset of “ripping, tearing, searing, or sharp” severe chest or upper back or abdominal pain
   3. Syncope and chest pain
   4. Shortness of breath
   5. CVA or stroke
   6. Loss of pulses
   7. Aortic insufficiency murmur

VII. Aneurysm of the thoracic aorta or thoracoabdominal aneurysm\textsuperscript{23-28} (CTA is preferred.) [One of the following]
A. Patient with Marfan’s or Ehlers-Danlos syndrome
B. Turner’s syndrome if initial imaging is normal and there are no risk factors for aortic dissection repeat imaging every 5-10 years
C. Asymptomatic patient with [One of the following]
   1. Ascending aorta with diameter \textgreater;3.7 cm
   2. Aortic arch and/or descending aorta with diameter \textgreater;3.5 cm by chest x-ray
   3. Any segment dilated to twice the adjacent normal diameter
   4. Bicuspid aortic valve on echocardiogram
   5. First degree relative with thoracic aneurysm and/or dissection
D. Known thoracic or thoracoabdominal aneurysm
   1. Asymptomatic with no repair [One of the following]
      a. Follow up scan 6 months after initial diagnosis
      b. If no change on the 6 month follow up scan then once every 12 months unless symptoms develop or the aneurysm has increased in size
      c. Marfan’s syndrome annual screening
      d. Marfan’s syndrome with aortic diameter of 4.5 cm or more or there has been growth in the aneurysm imaging should be performed more frequently than once every 12 months
   2. Symptoms [One of the following]
      a. Chest pain
      b. Aortic insufficiency, new diastolic murmur
c. Superior vena cava compression  
d. Left vocal cord paralysis  

E. Preoperative planning for endovascular repair (stent graft)  
F. Postoperative evaluation following surgical or endovascular repair (stent graft)  
   1. 1 month after repair  
   2. 3 months after repair  
   3. 6 months after repair  
   4. 12 months after repair  
   5. Annually  

VIII. Soft tissue mass of the chest wall including a supraclavicular mass or axillary adenopathy
A. Chest x-ray  

References:

I. Known or suspected pulmonary embolism (CTA of the chest should be done, CPT 71275, unless contraindicated such as an allergy to iodinated contrast.)\textsuperscript{1-3}
   A. Clinical findings [One of the following]
      1. Sudden onset of dyspnea
      2. Pleuritic chest pain
      3. Cough
      4. Hemoptysis
      5. Tachypnea
      6. Known DVT by sonography
      7. Known malignancy
      8. Unilateral leg swelling
      9. Recent surgery
     10. Recent immobilization of lower extremity

II. Developmental anomalies of the thoracic vasculature for initial evaluation, treatment planning and post-operative evaluation when echocardiography is not sufficient [One of the following]\textsuperscript{4-7}
   A. Coarctation of the aorta
   B. Right-sided aortic arch
   C. Truncus arteriosus
   D. Persistent left superior vena cava
   E. Interrupted inferior vena cava
   F. Total anomalous pulmonary venous return
   G. Pulmonary artery atresia
   H. Pulmonary artery hypoplasia or Bicuspid aortic valve
   I. Patent ductus
   J. Tetralogy of Fallot
   K. ASD
   L. Ebstein’s anomaly
   M. Corrected transposition of the great vessels
   N. Sinus of Valsalva aneurysm
   O. Coronary artery anomalies
   P. VSD
   Q. Other known or suspected congenital anomalies of the heart

III. Suspected dissection of the thoracic aorta [One of the following]\textsuperscript{8-14}
   A. Unequal blood pressure in the arms
   B. Rapid onset of “ripping, tearing, searing, or sharp” severe chest or upper back or abdominal pain
   C. Syncope and chest pain
   D. Shortness of breath
E. CVA or stroke
F. Loss of pulses
G. Aortic insufficiency murmur
H. Marfan’s syndrome
I. Known aortic valve disease
J. Follow up of known dissection [One of the following]
   1. 1 month after repair
   2. 3 months after repair
   3. 6 months after repair
   4. 12 months after repair
   5. Annually after 12 months
K. New symptoms after repair [One of the following]
   1. Unequal blood pressure in the arms
   2. Rapid onset of “ripping, tearing, searing, or sharp” severe chest or upper back abdominal pain
   3. Syncope and chest pain
   4. Shortness of breath
   5. CVA or stroke
   6. Loss of pulses
L. Aortic insufficiency murmur

IV. Aneurysm of the thoracic aorta or thoracoabdominal aneurysm [One of the following]\(^{12,15-20}\)
   A. Patient with Marfan or Ehlers-Danlos syndrome
   B. Turner’s syndrome if initial imaging is normal and there are no risk factors for aortic dissection repeat imaging every 5-10 years
   C. Asymptomatic patient with [One of the following]
      1. Ascending aorta with diameter >3.7 cm
      2. Aortic arch and/or descending aorta with diameter >3.5 cm by chest x-ray or
      3. Any segment dilated to twice the adjacent normal diameter
      4. Bicuspid aortic valve on echocardiogram
      5. First degree relative with thoracic aneurysm and/or dissection
   D. Known thoracic or thoracoabdominal aneurysm demonstrated by CT, CTA, MRI, MRA or ultrasound [One of the following]
      1. Asymptomatic [One of the following]
         a. Follow up scan 6 months after initial diagnosis or
         b. If no change on the 6 month follow up scan then once every 12 months unless symptoms develop or the aneurysm has increased in size
         c. Marfan’s syndrome annual screening
         d. Marfan’s syndrome with aortic diameter of 4.5 cm or more or there has been growth in the aneurysm imaging should be performed more frequently than once every 12 months
      2. Symptoms [One of the following]
         a. Chest pain
         b. Aortic insufficiency, new diastolic murmur
         c. Superior vena cava compression
d. Left vocal cord paralysis

E. Preoperative planning for endovascular or surgical repair (stent graft)

F. Postoperative evaluation following surgery or endovascular repair (stent graft) [One of the following]
   1. 1 month after repair
   2. 3 months after repair
   3. 6 months after repair
   4. 12 months after repair
   5. Annually thereafter
   6. Suspicion of endoleak

V. Assess thoracic venous structures [One of the following]21-24
   A. Superior vena cava syndrome [One of the following] (CTA is preferred)
      1. Physical findings [One of the following]
         a. Swelling, edema or cyanosis of face and/or arms and/or neck
         b. Dilated anterior chest wall veins and/or collateral veins
      2. Neurologic symptoms [One of the following]
         a. Headache
         b. Dizziness, stupor, or syncope
         c. Visual disturbances
      3. Bending over or lying down accentuates symptoms
   B. Mapping for venous access
   C. Pulmonary vein ablation [One of the following]
      1. Atrial fibrillation
      2. Suspicion of pulmonary vein stenosis after ablation
   D. Evaluation pulmonary vein anomalies

VI. Pulmonary vein mapping [One of the following]21-22
   A. Planned radiofrequency ablation for treatment of atrial fibrillation
   B. Following radiofrequency ablation if there is a suspicion of venous stenosis

VII. Assessment of suspected pulmonary arteriovenous malformation [One of the following]25
   A. Screening with family history of Hereditary Hemorrhagic Telangiectasia (HHT)
   B. Findings on prior imaging suggestive of pulmonary AVM
   C. Personal history of known HHT

VIII. Aortic pathology [One of the following]
   A. Monitor known thoracic aneurysm documented on prior CT, CTA, MRI, MRA, angiogram (See indications for aneurysm IV above.) or
   B. Peripheral embolization
   C. Post traumatic [One of the following]
      1. Widening of the mediastinum
      2. Deviation of the trachea
      3. Loss of pulses
      4. Cyanosis of hands and/or feet
IX. **Aortitis** [One of the following]
   A. Arm or leg claudication or decreased pulses
   B. Syncope
   C. Subclavian steal syndrome
   D. Associated arthralgias and myalgias and synovitis
   E. Chest pain
   F. Hemoptysis
   G. Aortic insufficiency
   H. Abdominal pain with diarrhea and possible GI bleeding
   I. Angina
   J. Asymmetric blood pressure in the upper extremities

X. **Trauma** [One of the following]
   A. Chest pain
   B. Chest x-ray demonstrating abnormal mediastinal or aortic contour
   C. Deceleration injury by history
References:


Additional References for Medicare:


34. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (L31355) Wisconsin Physicians Service Insurance Corporation, Nebraska, accessed at [http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=36&CntctrType=1%7c9&KeyWord=71555&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=71555&kq=true&bc=IAAAAAA&](http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=36&CntctrType=1%7c9&KeyWord=71555&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=71555&kq=true&bc=IAAAAAA&).


71555 MRA or MRV Chest

Clinical criteria reviewed/revised: 4/17/12, 7/28/11, 11/17/10, 1/20/10

Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
71555  MRA or MRV Chest without or with Gadolinium

Medicare17-48 AR, CA, CO, CT, DC, DE, FL, HI, IA, IL, IN, KS, LA, MA, MD, ME, MI, MN, MO, MS, NE, NH, NJ, NM, NV, NY, OK, PA, RI, TX, VT, WI

I. Known or suspected pulmonary embolism (CTA of the chest should be done, CPT 71275, unless contraindicated such as an allergy to iodinated contrast.)1-3
   A. Clinical findings [One of the following]
      1. Sudden onset of dyspnea
      2. Pleuritic chest pain
      3. Cough
      4. Hemoptysis
      5. Tachypnea
      6. Known DVT by sonography
      7. Known malignancy
      8. Unilateral leg swelling
      9. Recent surgery
     10. Recent immobilization of lower extremity

II. Suspected dissection of the thoracic aorta [One of the following]4-10
   A. Unequal blood pressure in the arms
   B. Rapid onset of “ripping, tearing, searing, or sharp” severe chest or upper back or abdominal pain
   C. Syncope and chest pain
   D. Shortness of breath
   E. CVA or stroke
   F. Loss of pulses
   G. Aortic insufficiency murmur
   H. Marfan’s syndrome
   I. Known aortic valve disease
   J. Follow up of known dissection [One of the following]
      1. 1 month after repair
      2. 3 months after repair
      3. 6 months after repair
      4. 12 months after repair
      5. Annually after 12 months
   K. New symptoms after repair [One of the following]
      1. Unequal blood pressure in the arms
      2. Rapid onset of “ripping, tearing, searing, or sharp” severe chest or upper back abdominal pain
      3. Syncope and chest pain
      4. Shortness of breath
5. CVA or stroke
6. Loss of pulses

III. Aneurysm of the thoracic aorta or thoracoabdominal aneurysm [One of the following]\textsuperscript{8,11-16}

A. Patient with Marfan or Ehlers-Danlos syndrome
B. Turner’s syndrome if initial imaging is normal and there are no risk factors for aortic dissection
   repeat imaging every 5-10 years
C. Asymptomatic patient with [One of the following]
   1. Ascending aorta with diameter > 3.7 cm
   2. Aortic arch and/or descending aorta with diameter > 3.5 cm by chest x-ray or
   3. Any segment dilated to twice the adjacent normal diameter
   4. Bicuspid aortic valve on echocardiogram
   5. First degree relative with thoracic aneurysm and/or dissection
D. Known thoracic or thoracoabdominal aneurysm demonstrated by CT, CTA, MRI, MRA or ultrasound [One of the following]
   1. Asymptomatic [One of the following]
      a. Follow up scan 6 months after initial diagnosis or
      b. If no change on the 6 month follow up scan then once every 12 months unless
         symptoms develop or the aneurysm has increased in size
      c. Marfan's syndrome annual screening
      d. Marfan's syndrome with aortic diameter of 4.5 cm or more or there has been growth in
         the aneurysm imaging should be performed more frequently than once every 12
         months
   2. Symptoms [One of the following]
      a. Chest pain
      b. Aortic insufficiency, new diastolic murmur
      c. Superior vena cava compression
      d. Left vocal cord paralysis
E. Preoperative planning for endovascular or surgical repair (stent graft)
F. Postoperative evaluation following surgery or endovascular repair (stent graft) [One of the following]
   1. 1 month after repair
   2. 3 months after repair
   3. 6 months after repair
   4. 12 months after repair
   5. Annually thereafter
   6. Suspicion of endoleak
References:


17. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L32611), Novitas Solutions, Inc., Arkansas. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&PolicyType=Final&s=3&CntrctrType=1%7c9&KeyWord=71555&KeyWordSearchType=Exact&CptHcpcsCode=71555&kq=true&bc=IAAAAAAAAAAA.&


21. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L31399), Novitas Solutions, Inc., District of Columbia. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&PolicyType=Final&s=10&CntrctrType=1%7c9&KeyWord=71555&KeyWordSearchType=Exact&CptHcpcsCode=71555&kq=true&bc=IAAAAAAAAAAA.


71555 MRA or MRV Chest: Medicare AR, CA, CO, CT, DC, DE, FL, HI, IA, IL, IN, KS, LA, MA, MD, ME, MI, MN, MO, MS, NE, NH, NJ, NM, NV, NY, OK, PA, RI, TX, VT, WI

Clinical criteria reviewed/revised: 8/20/12, 8/01/12, 5/12/12, 4/17/12, 7/28/11, 11/17/10, 1/20/10

Medical Advisory Committee reviewed and approved: 12/12/12, 9/19/12, 9/21/11
Red Flags
If any of the following are part of the clinical history presented with a request for pre-certification of these CPT codes, the need to meet criteria concerning prior conservative management is waived and the examinations should be pre-certified if other criteria are met:

- History of cancer
- Unexplained weight loss
- Immunocompromised
- IV drug use
- Abnormal CBC, ESR, etc
- Urinary tract infections
- Pain increased when supine
- Aural temperature > 38.3°C or 100.9°F
- Urinary incontinence
- Urinary retention
- Decreased anal sphincter tone
- Saddle anesthesia
- Major motor weakness of a limb
- Trauma (This is age-dependent; lesser trauma required in older patients.)

I. Neck pain for at least 6 weeks and MRI cannot be performed\(^1,2\) (MRI is strongly preferred.) [One of the following]
   A. No red flags and failure to respond to conservative medical management consisting of either treatment with anti-inflammatory medication or muscle relaxants for at least 4 weeks or oral steroids or a series of epidural or transforaminal injections
   B. Symptoms worsening while under treatment described in A

II. Trauma\(^3,4\) [One of the following]
   A. Fracture by x-ray
   B. Posterior midline (bony) tenderness in the cervical spine
   C. Signs or symptoms suggesting injury to a specific spine level
   D. Older than 64
   E. Paresthesias in the extremities
   F. Inability to rotate the neck actively
   G. Child < 14 yrs with known cervical fracture
   H. Child < 14 years with known thoracic or lumbar spine fracture
   I. Trauma with altered mental status
   J. History of DISH (diffuse idiopathic skeletal hyperostosis) or ankylosing spondylitis
   K. Falls from height of 3 feet or 5 or more stairs
   L. Diving accident
III. Suspected malignancy\(^5\) (MRI is strongly preferred; for bone MRI without contrast is preferred and for soft tissue tumor or tumor in the spinal canal MRI without and with contrast is preferred and should be done unless there is an absolute contraindication to MRI.) [One of the following]
   A. Primary [One of the following]
      1. Persistent pain, especially at night
      2. Tenderness
      3. Radiculopathy due to neurocompression (pain or motor weakness in nerve root distribution)
      4. New onset of scoliosis or kyphosis
   B. Metastatic [One of the following]
      1. Known malignancy elsewhere (lung, breast, prostate, renal, thyroid, and gastrointestinal carcinomas)
      2. Pain, often severe and unrelenting
      3. Follow-up may be approved after chemotherapy or radiation therapy

IV. Myelopathy\(^{10}\) (MRI is strongly preferred. CT should not be done unless MRI is absolutely contraindicated.) [One of the following]
   A. Symptoms or findings on examination [One of the following]
      1. Clumsiness of the hands
      2. Paresthesias of the hands
      3. Gait disturbance
      4. Lhermitte’s sign (cervical flexion and extension producing electric shocks down the arm and leg)
      5. Hoffman’s sign (evidence of upper motor neuron lesion from spinal cord compression)
      6. Neck stiffness
      7. Weakness or stiffness of the legs (objective weakness on exam that is 3/5 or less)
      8. Arm pain
      9. Bowel and bladder control problems
      10. Hyperreflexia
      11. Ankle clonus
      12. Numbness and/or tingling in the upper extremities
      13. Positive Babinski sign
      14. Loss of coordination
   B. Known myelopathy including MS [One of the following]
      1. Baseline or follow-up of treatment with Rebif\(^\circ\)
      2. New or worsening of symptoms as in A above
      3. Follow-up of treatment including natalizumab/Tysabri\(^\circ\)
   C. Annual follow-up with no change in signs or symptom

V. Radiculopathy or suspected spinal stenosis with symptoms for at least 4 weeks\(^{11-13}\) (MRI is strongly preferred. CT should only be performed if MRI is absolutely contraindicated.) [One of the following]
   Presence of red flags waives any conservative management requirements.
A. Clinical findings and/or symptoms with no red flags; failure to respond to conservative medical management consisting of either treatment with anti-inflammatory medication or muscle relaxants for at least 4 weeks; or oral steroids or a series of epidural or transforaminal injections [One of the following]
   1. Arm pain
   2. Neck pain
   3. Scapular or periscapular pain
   4. Paresthesias (tingling)
   5. Numbness
   6. Weakness of the arm
   7. Abnormal reflexes in the arm
   8. Muscle atrophy
   9. Dysesthesias (burning sensation)
   10. Objective weakness in a nerve root distribution on examination which is 3/5 or less
B. Symptoms worsening while under treatment described in A

VI. Infection [MRI without and with contrast is strongly preferred. MRI should be done first unless absolutely contraindicated.] [One of the following]
A. Osteomyelitis [One of the following]
   1. Laboratory findings [One of the following]
      a. Aural temperature > 38.3°C or 100.9°F
      b. WBC > 11,500/cu.mm
      c. ESR > 20mm/hr
      d. C-reactive protein > 10 mg/L
      e. Blood culture positive
   2. History of infection elsewhere
   3. History of diabetes, dialysis or peripheral vascular disease
   4. X-ray suggestive of osteomyelitis
   5. Sinus tract, poor wound or fracture healing
   6. History of penetrating injury or surgery
   7. Pre-operative evaluation of osteomyelitis
B. Follow-up during or after therapy for osteomyelitis, epidural abscess or disc space infection [One of the following]
   1. New or worsening pain at site or neurologic signs or symptoms
   2. Periodic evaluation of response to therapy
C. Suspected epidural abscess or disc space infection (MRI with gadolinium is strongly preferred.) [All]
   1. Progressive neurological symptoms [One of the following]
      a. Radiating nerve root pain
      b. Muscle weakness
      c. Sensory deficit
   2. Risk factors [One of the following]
      a. Trauma
      b. Prior spinal procedure
      c. Infection elsewhere
      d. IV drug use
e. Diabetes
f. Immunosuppression

3. Clinical and laboratory findings [One of the following]
   a. Aural temperature > 38.3°C or 100.9°F
   b. WBC > 11,500/cu.mm
   c. ESR > 20 mm/hr
   d. C-reactive protein > 10 mg/L
   e. Blood culture positive

D. Follow-up during therapy for epidural abscess or disc space infection [One of the following]
   1. New or worsening pain at site or neurologic signs or symptoms
   2. Periodic evaluation of response to therapy

VII. Brachial plexus\(^{15}\) (MRI is strongly preferred and CT should not be performed unless MRI absolutely contraindicated.) [One of the following]

A. Brachial plexus injury [Both]
   1. Symptoms [One of the following]
      a. Weakness or paralysis of the upper extremity
      b. Sensory loss or numbness of the upper extremity
      c. Horner’s syndrome
      d. Shoulder and/or arm pain
      e. Burning or electric sensation in more than one nerve distribution
      f. Loss of deep tendon reflexes in the upper extremity
      g. EMG showing a neurogenic lesion in muscles supplied by at least 2 cervical levels
   2. History [One of the following]
      a. Trauma including birth trauma
      b. Radiation fibrosis
      c. History of radiation therapy to the chest, breast or axilla

B. Primary or metastatic tumor [Both]
   1. Symptoms [One of the following]
      a. Weakness or paralysis of the upper extremity
      b. Sensory loss or numbness of the upper extremity
      c. Horner’s syndrome
      d. Shoulder and/or arm pain
      e. Burning or electric sensation in more than one nerve distribution
      f. Loss of deep tendon reflexes in the upper extremity
      g. EMG showing a neurogenic lesion in muscles supplied by at least 2 cervical levels
   2. History [One of the following]
      a. Known primary tumor
      b. Lung cancer especially a Pancoast tumor
      c. Lymphoma

C. Schwannoma or neurofibroma
   1. Symptoms [One of the following]
      a. Palpable mass in the lower neck or supraclavicular fossa
      b. Weakness or paralysis of the upper extremity
      c. Sensory loss or numbness in the upper extremity
      d. Horner’s syndrome
e. Shoulder and/or arm pain
f. Burning or electric sensation in more than one nerve distribution
g. Loss of deep tendon reflexes in the upper extremity
h. EMG showing a neurogenic lesion in muscles supplied by at least 2 cervical levels

D. Entrapment [One of the following]
   1. Symptoms
      a. Pain and paresthesia along the ulna aspect of the forearm, hand and 4th and 5th fingers
      2. Symptoms increase with overhead activities

VIII. Discography¹⁶,¹⁷
   A. To confirm that the symptoms are attributable to a particular disc prior to therapeutic intervention

IX. Evaluation of recurrent symptoms after spinal surgery
    A. Evaluation of spinal fusion

X. CT myelogram

XI. Injection with contaminated steroids
References:

Red Flags
If any of the following are part of the clinical history presented with a request for pre-certification of these CPT codes, the need to meet criteria concerning prior conservative management is waived and the examinations should be pre-certified if other criteria are met:

- History of cancer
- Unexplained weight loss
- Immunocompromised
- IV drug use
- Abnormal CBC, ESR
- Urinary tract infections
- Pain increased when supine
- Aural temperature > 38.3°C or 100.9°F
- Urinary retention
- Urinary incontinence
- Decreased anal sphincter tone
- Saddle anesthesia
- Major motor weakness of a limb
- Trauma (this is age dependent, lesser trauma required in older patients)

I. Back pain confined to thoracic region for 6 weeks or more and there is an absolute contraindication to MRI
   A. No red flags and failure to respond to conservative medical management [One of the following]
      1. Continued pain after treatment with anti-inflammatory medication or muscle relaxants for at least 4 weeks, unless contraindicated or not tolerated or failed epidural or transforaminal injections
      2. Symptoms worsening while under treatment
      3. Pain severe enough to require opiates (narcotics) with no relief after 2 days

II. Trauma [One of the following]
    A. Signs or symptoms suggesting injury to a specific spine level
    B. Fracture by x-ray
    C. Back pain or midline tenderness
    D. History of recent spinal fracture at any level

III. Radiculopathy or suspected spinal stenosis (MRI is strongly preferred CT should only be performed if MRI is absolutely contraindicated.)
    Presence of red flags waives any conservative management requirements.
    A. Symptoms must be present for more than 4 weeks unless there is a red flag
B. Clinical findings [1 and 2]
   1. Sensory disturbances (may be band-like) [One of the following]
      a. Pain in nerve root distribution
      b. Numbness
      c. Tingling sensations (paresthesias)
      d. Burning sensations (dysesthesias)
      e. Shooting pain
   2. No red flags and no relief after conservative medical management [Any]
      a. Continued pain after treatment with anti-inflammatory medication or muscle relaxants for at least 4 weeks, unless contraindicated or not tolerated or failed epidural or transforaminal injections
      b. Symptoms worsening while under treatment
      c. Pain severe enough to require opiates (narcotics) with no relief after 2 days

IV. Myelopathy (MRI is strongly preferred; CT should only be performed if MRI is absolutely contraindicated.) (The spinal cord ends at about T12 or L1. Suspicion of lumbar myelopathy is evaluated by examining the thoracic spine.)
A. Symptoms and findings on examination
   1. Pain
      a. May precede neurologic symptoms
      b. Progressively worsens
      c. Increases when supine
   2. Motor weakness, gait ataxia or paralysis
   3. Loss of bladder or bowel function
   4. Profound sensory deficit
   5. Bilateral radiculopathy
   6. Hyperreflexia
   7. Ankle clonus
   8. Loss of coordination
   9. Numbness or tingling
B. Known myelopathy including MS [One of the following]
   1. Baseline or follow-up of treatment with Rebif®
   2. New or worsening of symptoms as in A above
   3. Follow-up of treatment including natalizumab/Tysabri®
C. Annual follow-up with no change in signs or symptoms

V. Suspected malignancy5-8 (MRI is strongly preferred; for bone, MRI without contrast and for soft tissue or tumor in the canal, MRI without and with contrast is preferred and should be done unless absolutely contraindicated.)
A. Primary [One of the following]
   1. Persistent pain, especially at night
   2. Tenderness
   3. Radiculopathy due to neurocompression (pain or motor weakness in nerve root distribution)
   4. New onset of scoliosis or kyphosis
B. Metastatic [One of the following]
1. Known malignancy elsewhere (for example lung, breast, prostate, renal, thyroid and gastrointestinal carcinomas)
2. Pain, often severe and unrelenting
3. Follow-up may be approved after chemotherapy or radiation therapy

VI. Infection (including osteomyelitis and discitis and epidural abscess)⁹,¹⁰ (MRI with and without contrast is the preferred study, and CT should not be done unless there is an absolute contraindication for MRI.) [One of the following]
A. Osteomyelitis [One of the following]
   1. Laboratory findings [One of the following]
      a. Aural temperature > 38.3°C or 100.9°F
      b. WBC > 11,500/cu.mm
      c. ESR > 20mm/hr
      d. C-reactive protein > 10 mg/L
      e. Blood culture positive
   2. History of infection elsewhere
   3. History of diabetes, dialysis or peripheral vascular disease
   4. X-ray suggestive of osteomyelitis
   5. Sinus tract, poor wound or fracture healing
   6. History of penetrating injury or surgery
B. Preoperative evaluation of osteomyelitis
C. Follow-up during or after therapy for osteomyelitis, epidural abscess or disc space infection [One of the following]
   1. New or worsening pain at site or neurologic signs or symptoms
   2. Periodic evaluation of response to therapy
D. Suspected epidural abscess or disc space infection (MRI with gadolinium is strongly preferred.) [All]
   1. Progressive neurological symptoms [One of the following]
      a. Radiating nerve root pain
      b. Muscle weakness
      c. Sensory deficit
   2. Risk factors [One of the following]
      a. Trauma
      b. Prior spinal procedure
      c. Infection elsewhere
      d. IV drug use
      e. Diabetes
      f. Immunosuppression
   3. Clinical and laboratory findings [One of the following]
      a. Aural temperature > 38.3°C or 100.9°F
      b. WBC > 11,500/cu.mm
      c. ESR > 20 mm/hr
      d. C-reactive protein > 10 mg/L
      e. Blood culture positive
E. Follow-up during therapy for epidural abscess or disc space infection [One of the following]
   1. New or worsening pain at site or neurologic signs or symptoms
2. Periodic evaluation of response to therapy

VII. Discography
   A. To confirm that the symptoms are attributable to a particular disc prior to therapeutic intervention

VIII. Evaluation of scoliosis [One of the following]
   A. Preoperative assessment
   B. Any neurologic finding in the presence of scoliosis
   C. Atypical curve pattern
   D. Congenital scoliosis
   E. Neurofibromatosis
   F. Marfan’s syndrome

IX. Evaluation for possible vertebroplasty [One of the following]
   A. Painful osteoporotic or non neoplastic compression fracture
      1. No red flags and failure to respond to conservative medical management
         a. Continued pain after anti-inflammatory medication for at least 4 weeks, unless contraindicated or not tolerated
         b. Symptoms worsening while under treatment
         c. Pain severe enough to require opiates (narcotics) with no relief after 2 days

X. Evaluation of recurrent symptoms after spinal surgery
   A. Evaluation of spinal fusion

XI. CT myelography

XII. Injection of contaminated steroids
References:

72131  CT of the Lumbar Spine without Contrast
72132  CT of the Lumbar Spine with Contrast
72133  CT of the Lumbar Spine without and with Contrast

Red Flags
If any of the following are part of the clinical history presented with a request for pre-certification of these CPT codes the need to meet criteria concerning prior conservative management is waived and the examinations should be pre-certified if other criteria are met:
- History of cancer
- Unexplained weight loss
- Immunocompromised
- IV drug use
- Abnormal CBC, ESR
- Urinary tract infections
- Urinary retention
- Urinary incontinence
- Decreased anal sphincter tone
- Aural temperature > 38.3°C or 100.9°F
- Saddle anesthesia
- Major motor weakness of a limb
- Trauma (This is age-dependent; lesser trauma required in older patients.)

I. Low back pain (including neurogenic claudication) or lumbar spine pain for at least 6 weeks and MRI cannot be performed (MRI is strongly preferred.)¹⁻⁵ [One of the following]
   A. No red flags and failure to respond to conservative medical management consisting of either treatment with anti-inflammatory medication or muscle relaxants for at least 4 weeks or oral steroids or a series of epidural or transforaminal injections
   B. Symptoms worsening while under treatment described in A

II. Trauma⁶ [One of the following]
   A. Trauma and neurologic findings such as but not limited to one of the following
      1. Saddle anesthesia
      2. Profound sensory deficit
      3. Bowel or bladder dysfunction
      4. Severe motor deficit
      5. Diminished rectal sphincter tone
      6. Bilateral radiculopathy
      7. Neurogenic claudication
   B. Cervical spine fracture
   C. Fracture of the lumbar spine by x-ray
III. Radiculopathy\(^1-4\) (with symptoms for at least 4 weeks) (MRI is strongly preferred. CT should only be performed if MRI is absolutely contraindicated.\) [One of the following]
Presence of red flags waives any conservative management requirements
A. Clinical findings and/or symptoms with no red flags; failure to respond to conservative medical management consisting of either treatment with anti-inflammatory medication or muscle relaxants for at least 4 weeks; or oral steroids or a series of epidural or transforaminal injections [One of the following]
1. Motor disturbances [One of the following]
   a. Hyporeflexia
   b. Muscle atrophy
   c. Objective weakness (3 out of 5 or more severe)
2. Sensory disturbances [One of the following]
   a. Pain in nerve root distribution
   b. Numbness
   c. Tingling sensations (paresthesias)
   d. Burning sensations (dysesthesias)
   e. Shooting pain
   f. Neurogenic claudication
3. Straight leg raising reproduces the pain between 30 and 70 degrees of leg elevation
4. Crossed straight-leg raise test (Lasegue's sign) reproduces the pain at 30 to 70 degrees of leg elevation
B. Symptoms worsening while under treatment as described in A

IV. Suspected spinal stenosis with symptoms for at least 4 weeks (MRI is preferred and should be done unless absolutely contraindicated.\) [All]
A. Clinical findings and/or symptoms with no red flags; failure to respond to conservative medical management consisting of either treatment with anti-inflammatory medication or muscle relaxants for at least 4 weeks; or oral steroids or a series of epidural or transforaminal injections [One of the following]
1. Symptoms [One of the following]
   a. Bilateral leg pain
   b. Bilateral buttock pain
   c. Paresthesias
   d. Tingling
   e. Dull fatigue in the thigh and leg
   f. Objective measure of weakness
   g. Neurogenic claudication
   h. Symptoms increase with walking or standing and relieved by sitting or lying down
B. Symptoms worsening while under treatment as described in A

V. Suspected cauda equina syndrome\(^1-5\) (MRI without and with gadolinium is strongly preferred and should be done unless there is an absolute contraindication to MRI.\)
A. Sudden unexplained onset of [One of the following]
1. Saddle anesthesia
2. Profound sensory deficit
3. Bowel or bladder dysfunction
4. Leg numbness and weakness
5. Diminished rectal sphincter tone
6. Bilateral radiculopathy
7. Neurogenic claudication

VI. **Suspected malignancy** (MRI is strongly preferred; for bone, MRI without contrast is preferred, and for soft tissue tumor or tumor in the spinal canal, MRI without and with contrast is preferred and should be done unless there is an absolute contraindication to MRI.)
A. Primary or metastatic bone tumor (Gadolinium not required if there are no neurological signs or symptoms.) [One of the following]
   1. Known malignancy with lumbar spine pain
   2. Follow-up primary or metastatic bone tumor confirmed on prior imaging study
   3. New or worsening pain at site of known bone tumor
   4. Periodic assessment not more frequently than every 3 months unless there are new signs or symptoms during chemotherapy, radiation therapy, or after surgery for bone tumor
   5. New onset scoliosis

VII. **Infection** (MRI without and with gadolinium is strongly preferred and should be performed unless absolutely contraindicated.) [One of the following]
A. Osteomyelitis [One of the following]
   1. Laboratory findings [One of the following]
      a. Aural temperature > 38.3° C or 100.9° F
      b. WBC > 11,500/cu.mm
      c. ESR > 20mm/hr
      d. C-reactive protein > 10 mg/L
      e. Blood culture positive
   2. History of infection elsewhere
   3. History of diabetes, dialysis or peripheral vascular disease
   4. X-ray suggestive of osteomyelitis
   5. Sinus tract, poor wound or fracture healing
   6. History of penetrating injury or surgery
B. Pre-operative evaluation of osteomyelitis
C. Follow-up during or after therapy for osteomyelitis, epidural abscess or disc space infection [One of the following]
   1. New or worsening pain at site or neurologic signs or symptoms
   2. Periodic evaluation of response to therapy
D. Suspected epidural abscess or disc space infection [MRI with gadolinium is strongly preferred] [All]
   1. Progressive neurological symptoms [One of the following]
      a. Radiating nerve root pain
      b. Muscle weakness
      c. Sensory deficit
d. Spinal pain
2. Risk factors [One of the following]
   a. Trauma
   b. Prior spinal procedure
   c. Infection elsewhere
   d. IV drug use
   e. Diabetes
   f. Immunosuppression
3. Clinical and laboratory findings [One of the following]
   a. Aural temperature > 38.3°C or 100.9°F
   b. WBC > 11,500/cu.mm
   c. ESR > 20 mm/hr
   d. C-reactive protein > 10 mg/L
   e. Blood culture positive

E. Follow-up during therapy for epidural abscess or disc space infection [One of the following]
   1. New or worsening pain at site or neurologic signs or symptoms
   2. Periodic evaluation of response to therapy

VIII. Suspected meningocele or myelomeningocele (MRI is strongly preferred.)

IX. Discography¹³
   A. To confirm that patient’s symptoms are attributable to a particular disc, prior to therapeutic intervention

X. Tethered cord¹⁴ (MRI is strongly preferred and should be done unless absolutely contraindicated.) [One of the following]
   A. Documented Arnold-Chiari malformation
   B. Symptoms [One of the following]
      1. Low back and leg pain worst in the am
      2. Spastic gait
      3. Hair tuft
      4. Dimple
      5. Hemangioma
      6. Incontinence
      7. Scoliosis
      8. Weakness of lower extremity

XI. Evaluation of recurrent symptoms after spinal surgery
   A. Evaluation of spinal fusion

XII. Evaluation for possible vertebroplasty¹⁵
   A. Painful osteoporotic or non-neoplastic compression fracture [One of the following]
      1. Failure to respond to conservative medical management consisting of either treatment with anti-inflammatory medication or muscle relaxants for at least 4 weeks; or oral steroids or a series of epidural or transforaminal injections
      2. Symptoms worsening while under treatment described in 1
XIII. CT myelography

XIV. Injection of contaminated steroids

References:


Additional references for Medicare:

16. Local Coverage Determination (LCD) for Computerized Tomography (CAT Scans) (L28544), Wisconsin Physicians Service Insurance Corporation, Iowa. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=17%CntrctType=1%7c9&Key Word=72131&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=72131&kq=true&bc=IAAAAAAAA&.
17. Local Coverage Determination (LCD) for Computerized Tomography (CAT Scans) (L28544), Wisconsin Physicians Service Insurance Corporation, Illinois. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=19%CntrctType=1%7c9&Key Word=72131&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=72131&kq=true&bc=IAAAAAAAA&.
18. Local Coverage Determination (LCD) for Computerized Tomography (CAT Scans) (L28544), Wisconsin Physicians Service Insurance Corporation, Kansas. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=21%CntrctType=1%7c9&Key Word=72131&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=72131&kq=true&bc=IAAAAAAAA&.
19. Local Coverage Determination (LCD) for Computerized Tomography (CAT Scans) (L28544), Wisconsin Physicians Service Insurance Corporation, Michigan. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=27%CntrctType=1%7c9&Key Word=72131&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=72131&kq=true&bc=IAAAAAAAA&.
72141 MRI Cervical Spine without Gadolinium

Red Flags
If any of the following are part of the clinical history presented with a request for pre-certification of these CPT codes the need to meet criteria concerning prior conservative management is waived and the examinations should be pre-certified if other criteria are met:

- History of cancer
- Unexplained weight loss
- Immunocompromised
- IV drug use
- Abnormal CBC, sed rate
- Urinary tract infections
- Aural temperature > 38.3°C or 100.9°F
- Urine retention
- Urine incontinence
- Decreased anal sphincter tone
- Saddle anesthesia
- Major motor weakness of a limb
- Trauma (This is age-dependent; lesser trauma required in older patients.)

I. Neck pain for at least 6 weeks\textsuperscript{1-3} [One of the following]
   A. No red flags and failure to respond to conservative medical management consisting of either treatment with anti-inflammatory medication or muscle relaxants for at least 4 weeks or oral steroids or a series of epidural or transforaminal injections
   B. Symptoms worsening while under treatment described in A

II. Trauma\textsuperscript{4-6} [One of the following]
   A. Fracture by x-ray
   B. Posterior midline (bony) tenderness in the cervical spine
   C. Signs or symptoms suggesting injury to a specific spine level
   D. Older than 64
   E. Paresthesias in the extremities
   F. Inability to rotate the neck actively
   G. Child < 14 years with known cervical fracture
   H. Child < 14 years with known thoracic or lumbar spine fracture
   I. Trauma with altered mental status
   J. History of DISH (diffuse idiopathic skeletal hyperostosis) or ankylosing spondylitis
   K. Falls from height of 3 feet or 5 or more stairs
   L. Diving accident

III. Suspected tumor of bone (For cord, see 72142, 72156.)\textsuperscript{7-13}
A. Primary or metastatic bone tumor (gadolinium not required if there are no neurological signs or symptoms.) [One of the following]
   1. Known malignancy with cervical spine pain
   2. Follow-up primary or metastatic bone tumor seen on prior imaging study
   3. New or worsening pain at site of known bone tumor
   4. Periodic assessment during chemotherapy, radiation Rx, or surgery for bone tumor
   5. New onset scoliosis
   6. New onset kyphosis

IV. Suspected or known multiple sclerosis (MS), myelopathy or demyelinating disease⁵,¹⁴-¹⁷ [One of the following]
   A. Suspected [One of the following]
      1. Clumsiness of the hands
      2. Paresthesias of the hands
      3. Gait disturbance
      4. Lhermitte’s sign (cervical flexion and extension producing electric shocks down the arm and leg)
      5. Hoffman’s sign (evidence of upper motor neuron lesion from spinal cord compression)
      6. Neck stiffness
      7. Weakness or stiffness of the legs (objective weakness on exam that is 3/5 or less)
      8. Arm pain
      9. Bowel and bladder control problems (urinary urgency or hesitancy)
      10. Hyperreflexia
      11. Ankle clonus
      12. Numbness and/or tingling in the upper extremities
      13. Positive Babinski sign
      14. Loss of coordination
   B. Known myelopathy including MS [One of the following]
      1. Baseline or follow up of treatment with Rebif®
      2. New or worsening of symptoms as in A above
      3. Follow up of treatment including natalizumab/Tysabri®
      4. Annual follow up with no change in signs or symptoms

V. Neck pain for at least 6 weeks¹-³ [One of the following]
   A. No red flags and failure to respond to conservative medical management consisting of either treatment with anti-inflammatory medication or muscle relaxants for at least 4 weeks or oral steroids or a series of epidural or transforaminal injections
   B. Symptoms worsening while under treatment described in A

VI. Syrinx or syringomyelia [One of the following] (MRI without and with contrast is preferred.)
   A. Known Chiari 1 malformation
   B. Asymmetric sensory loss and or weakness in the arms
   C. History of spinal cord trauma
   D. History of myelitis
   E. Spinal cord tumor
VII. **Radiculopathy (MRI with contrast is preferred if there has been surgery from a posterior approach.)**\(^3,16,18-20\) [All]

Presence of red flags waives any conservative management requirements.

A. Clinical findings and/or symptoms with no red flags; failure to respond to conservative medical management consisting of either treatment with anti-inflammatory medication or muscle relaxants for at least 4 weeks; or oral steroids or a series of epidural or transforaminal injections [One of the following]
   1. Arm pain
   2. Neck pain
   3. Scapular or periscapular pain
   4. Paresthesias (tingling)
   5. Numbness
   6. Weakness of the arm
   7. Abnormal reflexes in the arm
   8. Muscle atrophy
   9. Dysesthesias (burning sensation)
   10. Objective weakness in a nerve root distribution on examination which is 3/5 or less

B. Symptoms worsening while under treatment described in A

VIII. **Evaluation of scoliosis**\(^21-23\) [One of the following]

A. Preoperative assessment
B. Any neurologic finding in the presence of scoliosis
C. Atypical curve pattern
D. Congenital scoliosis
E. Neurofibromatosis
F. Marfan's syndrome

IX. **Infection (MRI without and with contrast is the appropriate study.)**

X. **Injection of contaminated steroids**
References:

72142  MRI of the Cervical Spine with Gadolinium
72156  MRI of the Cervical Spine without and with Gadolinium

Red Flags
If any of the following are part of the clinical history presented with a request for pre-certification of these CPT codes the need to meet criteria concerning prior conservative management is waived and the examinations should be pre-certified if other criteria are met:
- History of cancer
- Unexplained weight loss
- Immunocompromised
- IV drug use
- Abnormal CBC, ESR
- Urinary tract infections
- Urinary retention
- Urinary incontinence
- Decreased anal sphincter tone
- Aural temperature > 38.3°C or >100.9°F
- Saddle anesthesia
- Major motor weakness of a limb
- Trauma (This is age-dependent, lesser trauma required in older patients.)

I. Suspected tumor of the cervical spinal cord or meninges
   A. Suspected primary or metastatic tumor of the cervical cord or leptomeninges (For medulloblastoma or ependymoma see II and III below.) [One of the following]
      1. Symptoms or findings on examination [One of the following]
         a. Hyperreflexia
         b. Weakness of the upper or lower extremity (objective weakness on exam that is 3/5 or less)
         c. Spasticity
         d. Bladder dysfunction
         e. Bowel dysfunction
         f. Lhermitte’s sign
         g. Sensory deficit
         h. New onset scoliosis
         i. New onset kyphosis
         j. Spastic gait
         k. Radiculopathy
         l. Localized tenderness over the spine
         m. Pain increased with straining
         n. Spinal pain interfering with sleep
      2. Periodic assessment during or after chemotherapy or radiation therapy for known tumor in the spinal canal not more frequently than once every 3 months unless there are new or worsening symptoms (See A1 above)
II. Medulloblastoma3-6 [One of the following]
   A. Initial evaluation
   B. Follow-up every 3 months for 2 years then every 6 months for 2 years and then annually
   C. New or worsening signs or symptoms
   D. Evaluation after completion of chemotherapy or radiation therapy

III. Ependymoma6 [One of the following]
   A. Initial evaluation
   B. Follow-up intervals at every 3-4 months for a year and then every 4-6 months for year 2 and every 6-12 months thereafter
   C. New or worsening signs or symptoms
   D. Evaluation after completion of chemotherapy or radiation therapy

IV. Known multiple sclerosis (MS)7-9 [One of the following]
   A. New symptoms in an individual with an established diagnosis of MS [One of the following]
      1. Clumsiness of the hands
      2. Paresthesias of the hands
      3. Gait disturbance
      4. Lhermitte’s sign (cervical flexion and extension producing electric shocks down the arm and leg)
      5. Hoffman’s sign (evidence of upper motor neuron lesion from spinal cord compression)
      6. Neck stiffness
      7. Weakness or stiffness of the legs
      8. Arm pain
      9. Bowel and/or bladder control problems (retention or incontinence)
      10. Hyperreflexia
      11. Ankle clonus
      12. Numbness and/or tingling in the upper extremities
      13. Positive Babinski sign
      14. Loss of coordination
      15. Spasticity
   B. Surveillance [One of the following]
      1. Baseline or follow up of treatment with Rebif®
      2. New or worsening of symptoms as in A above
      3. Follow-up of treatment including natalizumab/Tysabri®
      4. Annual follow-up with no change in signs and symptoms

V. Myelopathy7-9 [One of the following]
   A. Sensory, motor, or autonomic function is impaired at and below a horizontally defined level [One of the following]
      1. Clumsiness of the hands
      2. Paresthesias
      3. Gait disturbance
      4. Lhermitte’s sign (cervical flexion and extension producing electric shocks down the arm and leg)
      5. Hoffman’s sign (evidence of upper motor neuron lesion from spinal cord compression)
6. Neck stiffness
7. Weakness or stiffness of the legs (objective weakness on exam that is 3/5 or less)
8. Arm pain
9. Bowel and bladder control problems (retention or incontinence)
10. Hyperreflexia
11. Ankle clonus
12. History of spinal cord trauma

B. Known multiple sclerosis (See IV above.)

C. Syrinx or syringomyelia [One of the following]
   1. Known Chiari type 1 malformation
   2. Asymmetric sensory loss
   3. Objective weakness in arms (objective weakness on exam that is 3/5 or less)
   4. Decreased or absent reflexes
   5. Facial pain and numbness
   6. Scoliosis
   7. Muscle atrophy in the extremities
   8. Spasticity
   9. Tingling in the arms and hands
   10. Known syrinx and history or suspicion of spinal trauma, myelitis, or spinal cord tumor
   11. History of myelitis
   12. History of spinal cord tumor
   13. History of spinal cord trauma

VI. Infection (including osteomyelitis and discitis and epidural abscess)\textsuperscript{10-15} [One of the following]

A. Osteomyelitis [One of the following]
   1. Laboratory findings [One of the following]
      a. Aural temperature $>$ 38.3°C or $>$100.9°F
      b. WBC $>$ 11,500/cu.mm
      c. ESR $>$ 20mm/hr
      d. C-reactive protein $>$ 10 mg/L
      e. Blood culture positive
   2. History of infection elsewhere
   3. History of diabetes, dialysis or peripheral vascular disease
   4. X-ray suggestive of osteomyelitis
   5. Sinus tract, poor wound or fracture healing
   6. History of penetrating injury or surgery

B. Pre-operative evaluation of osteomyelitis

C. Follow-up during or after therapy for osteomyelitis, epidural abscess or disc space infection
   [One of the following]
   1. New or worsening pain at site or neurologic signs or symptoms
   2. Periodic evaluation of response to therapy

D. Suspected epidural abscess or disc space infection (MRI with gadolinium is strongly preferred.)
   [All]
   1. Progressive neurological symptoms [One of the following]
      a. Radiating nerve root pain
b. Muscle weakness  
c. Sensory deficit  
2. Risk factors [One of the following]  
a. Trauma  
b. Prior spinal procedure  
c. Infection elsewhere  
d. IV drug use  
e. Diabetes  
f. Immunosuppression  
3. Clinical and laboratory findings [One of the following]  
a. Aural temperature > 38.3°C or >100.9°F  
b. WBC > 11,500/cu.mm  
c. ESR > 20 mm/hr  
d. C-reactive protein > 10 mg/L  
e. Blood culture positive  
E. Follow-up during therapy for epidural abscess or disc space infection [One of the following]  
1. New or worsening pain at site or neurologic signs or symptoms  
2. Periodic evaluation of response to therapy  

VII. Brachial plexus

A. Brachial plexus injury [Both]

1. Symptoms [One of the following]  
a. Weakness or paralysis of the upper extremity  
b. Sensory loss or numbness of the upper extremity  
c. Horner’s syndrome  
d. Shoulder and/or arm pain  
e. Burning or electric sensation in more than one nerve distribution  
f. Loss of deep tendon reflexes in the upper extremity  
g. EMG showing a neurogenic lesion in muscles supplied by at least 2 cervical levels  
2. History [One of the following]  
a. Trauma including birth trauma  
b. Radiation fibrosis  
c. History of radiation therapy to the chest, breast or axilla  

B. Primary or metastatic tumor [Both]

1. Symptoms [One of the following]  
a. Weakness or paralysis of the upper extremity  
b. Sensory loss or numbness of the upper extremity  
c. Horner’s syndrome  
d. Shoulder and/or arm pain  
e. Burning or electric sensation in more than one nerve distribution  
f. Loss of deep tendon reflexes in the upper extremity  
g. EMG showing a neurogenic lesion in muscles supplied by at least 2 cervical levels  
2. History [One of the following]  
a. Known primary tumor  
b. Lung cancer especially a Pancoast tumor  
c. Lymphoma  

C. Schwannoma or neurofibroma
1. Symptoms [One of the following]
   a. Palpable mass in the lower neck or supraclavicular fossa
   b. Weakness or paralysis of the upper extremity
   c. Sensory loss or numbness in the upper extremity
   d. Horner’s syndrome
   e. Shoulder and/or arm pain
   f. Burning or electric sensation in more than one nerve distribution
   g. Loss of deep tendon reflexes in the upper extremity
   h. EMG showing a neurogenic lesion in muscles supplied by at least 2 cervical levels

D. Entrapment [One of the following]
   1. Symptoms
      a. Pain and paresthesia along the ulna aspect of the forearm, hand and 4th and 5th fingers
      b. Symptoms increase with overhead activities

VIII. Syrinx or syringomyelia [One of the following]
   A. Known Chiari type 1 malformation
   B. Asymmetric sensory loss
   C. Objective weakness in arms [Objective weakness on exam that is 3/5 or less]
   D. Decreased or absent reflexes
   E. Facial pain and numbness
   F. Scoliosis
   G. Muscle atrophy in the extremities
   H. Spasticity
   I. Tingling in the arms and hands
   J. Known syrinx and history or suspicion of spinal trauma, myelitis, or spinal cord tumor [One of the following]
      1. History of myelitis
      2. History of spinal cord tumor
      3. History of spinal cord trauma

IX. Radiculopathy with symptoms lasting at least 4 weeks and a history of prior surgery with a posterior approach\textsuperscript{17-23} [One of the following]
   A. Clinical findings and/or symptoms with no red flags; failure to respond to conservative medical management consisting of either treatment with anti-inflammatory medication or muscle relaxants for at least 4 weeks; or oral steroids or a series of epidural or transforaminal injections [One of the following]
      1. Arm pain
      2. Neck pain
      3. Scapular or periscapular pain
      4. Paresthesias (tingling)
      5. Numbness
      6. Weakness of the arm
      7. Abnormal reflexes in the arm
      8. Muscle atrophy
      9. Dysesthesias (burning sensation)
10. Objective weakness in a nerve root distribution on examination which is 3/5 or less
B. Symptoms worsening while under treatment described in A

X. Neck pain lasting at least 6 weeks and with a history of prior surgery with a posterior approach24 [One of the following]
A. No red flags and failure to respond to conservative medical management consisting of either treatment with anti-inflammatory medication or muscle relaxants for at least 4 weeks or oral steroids or a series of epidural or transformaminal injections
1. Symptoms worsening while under treatment described in A

XI. Injection of contaminated steroids

References:

Red Flags
If any of the following are part of the clinical history presented with a request for pre-certification of these CPT codes the need to meet criteria concerning prior conservative management is waived and the examinations should be pre-certified if other criteria are met:

- History of cancer
- Unexplained weight loss
- Immunocompromised
- IV drug use
- Abnormal CBC, ESR
- Urinary tract infections
- Pain increased when supine
- Urinary incontinence
- Urinary retention
- Decreased anal sphincter tone
- Aural temperature > 38.3°C or >100.9°F
- Saddle anesthesia
- Major motor weakness of a limb
- Trauma (This is age-dependent; lesser trauma required in older patients.)

I. **Back pain for at least 6 weeks which is confined to the thoracic region**[^1] [One of the following]
   A. No red flags and failure to respond to conservative medical management consisting of either treatment with anti-inflammatory medication or muscle relaxants for at least 4 weeks or oral steroids or a series of epidural or transforaminal injections
   B. Symptoms worsening while under treatment described in A

II. **Trauma**[^2-3] [One of the following]
   A. Fracture by x-ray
   B. Posterior midline (bony) tenderness in the cervical spine
   C. Signs or symptoms suggesting injury to a specific spine level
   D. Older than 64
   E. Paresthesias in the extremities
   F. Child < 14 yrs with known cervical fracture
   G. Child < 14 years with known cervical or lumbar spine fracture
   H. Trauma with altered mental status
   I. History of DISH (diffuse idiopathic skeletal hyperostosis) or ankylosing spondylitis
   J. Falls from height of 3 feet or 5 or more stairs
   K. Diving accident

III. **Suspected tumor**[^4-10] (For tumors of the thoracic cord, see MRI of the thoracic spine without and with gadolinium, 72157.)
A. Primary or metastatic bone tumor (gadolinium not required if there are no neurological signs or symptoms)
   1. Known malignancy with thoracic spine pain
   2. Follow-up primary or metastatic bone tumor confirmed on prior imaging study
   3. New or worsening pain at site of known bone tumor
   4. Periodic assessment during chemotherapy, radiation Rx, or surgery for bone tumor
   5. Pain
   6. New onset scoliosis
   7. New onset kyphosis

IV. Suspected or known multiple sclerosis (MS), myelopathy or demyelinating disease\textsuperscript{11,12} (The spinal cord ends at about T12 or L1. Suspicion of lumbar myelopathy is evaluated by examining the thoracic spine.)
A. Suspected [One of the following]
   1. Loss of coordination
   2. Numbness of the legs
   3. Mild paraparesis
   4. Bowel incontinence
   5. Bladder dysfunction (urgency and frequency more common than incontinence)
   6. Objective weakness of the legs
   7. Numbness of the legs
   8. New onset paresthesia
   9. Spasm
   10. Hyperreflexia in the legs
   11. Clonus
   12. Positive Babinski sign
   13. Pain increasing when supine
B. Known myelopathy including MS [One of the following]
   1. Baseline or follow up of treatment with Rebif\textsuperscript{®}
   2. New or worsening of symptoms
      a. New or worsening numbness in the legs or around the trunk
      b. New or worsening tingling in the legs or around the trunk
      c. Hyperreflexia
      d. Spasticity
      e. Positive Babinski sign
   3. Follow-up of treatment including natalizumab/Tysabri\textsuperscript{®}
   4. Annual follow-up with no change in signs or symptoms

V. Spinal stenosis with symptoms for at least 4 weeks [One of the following]
   Presence of red flags waives any conservative management requirements
A. Clinical findings and symptoms with no red flags and failure to respond to conservative medical management consisting of either treatment with anti-inflammatory medication or muscle relaxants for at least 4 weeks or oral steroids or a series of epidural or transforaminal injections [One of the following]
   1. Pain in nerve root distribution which may be band-like spanning the chest wall
   2. Pain referred to retrogastric or retrosternal areas
3. Numbness
4. Tingling sensations (paresthesias)
5. Burning sensations (dysesthesias)

B. Symptoms worsening while under treatment described in A

VI. Radiculopathy\textsuperscript{13} [One of the following]

Presence of red flags waives any conservative management requirements.

A. Clinical findings and symptoms with no red flags and failure to respond to conservative medical management consisting of either treatment with anti-inflammatory medication or muscle relaxants for at least 4 weeks or oral steroids or a series of epidural or transforaminal injections [One of the following]
   1. Pain in nerve root distribution which may be band like spanning the chest wall
   2. Pain referred to retrogastric or retrosternal areas
   3. Numbness
   4. Tingling sensations (paresthesias)
   5. Burning sensations (dysesthesias)

B. Symptoms worsening while under treatment described in A

VII. Evaluation of scoliosis\textsuperscript{14-16}

A. Preoperative assessment
B. Any neurologic finding in the presence of scoliosis
C. Atypical curve pattern
D. Congenital scoliosis
E. Neurofibromatosis
F. Marfan’s syndrome

VIII. Evaluation for possible vertebroplasty\textsuperscript{17,18}

A. Painful osteoporotic or neoplastic compression fracture or microfracture documented by MRI and/or a lytic lesion on CT without decreased height of a vertebra which is refractory to medical therapy as defined as one of the following
   1. Pain from a weakened or fractured vertebral body that renders an individual nonambulatory despite 24 hours of analgesic therapy
   2. Pain from a weakened or fractured vertebral body that prevents an individual from participating in physical therapy despite 24 hours of analgesic therapy
   3. Member with weakened or fractured vertebra that develops confusion, sedation or constipation from analgesic therapy

IX. Infection (MRI of the thoracic spine without and with contrast is the study of choice.)

X. Injection of contaminated steroids
References:


Additional Medicare References:

25. Local Coverage Determination (LCD) for Magnetic Resonance Imaging (L28723), Wisconsin Physicians Service Insurance Corporation, Wisconsin, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&Polic...nal&PolicyType=Final&s=57&CntrcrType=1%7c9&KeyWord=72146&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=72146&kq=true&bc=IAAAAAA

72146 MRI Thoracic Spine

Clinical criteria reviewed/revised: 7/9/12, 7/6/12, 8/26/11, 11/17/10, 9/16/09

Medical Advisory Committee reviewed and approved: 9/19/12, 6/27/12, 9/21/11
Red Flags
If any of the following are part of the clinical history presented with a request for pre-certification of these CPT codes the need to meet criteria concerning prior conservative management is waived and the examinations should be pre-certified if other criteria are met:

- History of cancer
- Unexplained weight loss
- Immunocompromised
- IV drug use
- Abnormal CBC, ESR
- Urinary tract infections
- Pain increased when supine
- Urinary retention
- Urinary incontinence
- Decreased anal sphincter tone
- Aural temperature > 38.3°C or >100.9°F
- Saddle anesthesia
- Major motor weakness of a limb
- Trauma (This is age-dependent; lesser trauma required in older patients.)

I. Suspected tumor of the thoracic spinal cord or meninges

A. Suspected primary or metastatic tumor of the thoracic cord or leptomeninges [One of the following]
   1. Symptoms or findings on examination with or without personal history of cancer [One of the following]
      a. Hyperreflexia
      b. Weakness of the lower extremities
      c. Spasticity
      d. Bladder dysfunction
      e. Bowel dysfunction
      f. Sensory loss
      g. New onset scoliosis
      h. New onset kyphosis
      i. Spastic gait
      j. Radiculopathy
      k. Localized tenderness over the spine
      l. Pain
      m. Spinal pain interfering with sleep
   2. Periodic assessment during or after chemotherapy or radiation therapy for known tumor in the spinal canal once every 3 months unless there are new or worsening symptoms (See A1 above.)
II. **Medulloblastoma [One of the following]**
   A. Initial evaluation
   B. Follow-up every 3 months for 2 years then every 6 months for 2 years and then annually
   C. New or worsening signs or symptoms
   D. Evaluation after completion of chemotherapy or radiation therapy

III. **Ependymoma [One of the following]**
   A. Initial evaluation
   B. Follow-up intervals at every 3-4 months for a year and then every 4-6 months for year 2 and every 6-12 months thereafter
   C. New or worsening of symptoms
   D. Evaluation after completion of chemotherapy or radiation therapy

IV. **Known multiple sclerosis (MS) [One of the following]**
   A. New symptoms in an individual with an established diagnosis of MS [One of the following]
      1. Gait disturbance
      2. Paresthesias
      3. Objective weakness or stiffness of the legs
      4. Bowel and/or bladder control problems (retention or incontinence)
      5. Hyperreflexia
      6. Ankle clonus
      7. Numbness and/or tingling in the legs
      8. Positive Babinski sign
      9. Loss of coordination
      10. Spasticity
      11. Loss of coordination
      12. Positive Babinski sign
      13. Paresthesias
   B. Surveillance [One of the following]
      1. Baseline or follow up of treatment with Rebif®
      2. New or worsening of symptoms as in A above
      3. Follow-up of treatment including natalizumab/Tysabri®
      4. Annual follow-up with no change in signs and symptoms

V. **Myelopathy [One of the following]**
   A. Sensory, motor, or autonomic function is impaired at and below a horizontally defined level [One of the following]
      1. Radiculopathy
      2. Bowel and/or bladder control problems (retention or incontinence)
      3. Hyperreflexia
      4. Ankle clonus
      5. Spasticity
      6. Objective weakness or stiffness of the legs
      7. Numbness or tingling of the legs
      8. Loss of coordination
      9. Positive Babinski sign
10. Paresthesias
11. Gait disturbance

B. Known multiple sclerosis (See IV above.)

C. Syrinx or syringomyelia [One of the following]
   1. Known Chiari type 1 malformation
   2. Asymmetric sensory loss
   3. Decreased or absent reflexes
   4. Scoliosis
   5. Muscle atrophy in the extremities
   6. Spasticity
   7. Tingling in the legs
   8. Known syrinx and history or suspicion of spinal trauma, myelitis, or spinal cord tumor
   9. History of myelitis
10. History of spinal cord tumor
11. History of spinal cord trauma

VI. Infection (including osteomyelitis and discitis and epidural abscess)\textsuperscript{13-18} [One of the following]

A. Osteomyelitis [One of the following]
   1. Laboratory findings [One of the following]
      a. Aural temperature > 38.3°C or >100.9°F
      b. WBC > 11,500/cu.mm
      c. ESR > 20mm/hr
      d. C-reactive protein > 10 mg/L
      e. Blood culture positive
   2. History of infection elsewhere
   3. History of diabetes, dialysis or peripheral vascular disease
   4. X-ray suggestive of osteomyelitis
   5. Sinus tract, poor wound or fracture healing
   6. History of penetrating injury or surgery

B. Pre-operative evaluation of osteomyelitis

C. Follow-up during or after therapy for osteomyelitis, epidural abscess or disc space infection [One of the following]
   1. New or worsening pain at site or neurologic signs or symptoms
   2. Periodic evaluation of response to therapy

D. Suspected epidural abscess or disc space infection (MRI with gadolinium is strongly preferred.) [All]
   1. Progressive neurological symptoms [One of the following]
      a. Radiating nerve root pain
      b. Muscle weakness
      c. Sensory deficit
   2. Risk factors [One of the following]
      a. Trauma
      b. Prior spinal procedure
      c. Infection elsewhere
      d. IV drug use
e. Diabetes  
f. Immunosuppression
3. Clinical and laboratory findings [One of the following]  
a. Aural temperature > 38.3°C or >100.9°F  
b. WBC > 11,500/cu.mm  
c. ESR > 20 mm/hr  
d. C-reactive protein > 10 mg/L  
e. Blood culture positive  
E. Follow-up during therapy for epidural abscess or disc space infection [One of the following]  
   1. New or worsening pain at site or neurologic signs or symptoms  
   2. Periodic evaluation of response to therapy  

VII. Syrinx or syringomyelia [One of the following]  
A. Known Chiari type 1 malformation  
B. Asymmetric sensory loss  
C. Objective weakness in legs  
D. Decreased or absent reflexes  
E. Facial pain and numbness  
F. Scoliosis  
G. Muscle atrophy in the extremities  
H. Spasticity  
I. Tingling in the legs  
J. Known syrinx and history or suspicion of spinal trauma, myelitis, or spinal cord tumor [One of the following]  
   1. History of myelitis  
   2. History of spinal cord tumor  
   3. History of spinal cord trauma  

VIII. Injection of contaminated steroids
References:

Imaging of the lumbar spine should be performed in patients with persistent low back pain and signs of radiculopathy or spinal stenosis only if they are candidates for either surgery or epidural steroid injections.

Red Flags
If any of the following are part of the clinical history presented with a request for pre-certification of these CPT codes, the need to meet criteria concerning prior conservative management is waived and the examinations should be pre-certified if other criteria are met:

- History of cancer
- Unexplained weight loss
- Immunocompromised
- IV drug use
- Abnormal CBC, ESR, etc
- Urinary tract infections
- Aural temperature > 38.3°C or >100.9°F
- Urinary incontinence
- Urinary retention
- Decreased anal sphincter tone
- Saddle anesthesia
- Major motor weakness of a limb
- Trauma (This is age-dependent; lesser trauma required in older patients.)

I. **Back pain**\(^{1-5}\) for at least 6 weeks (Contrast should be used if there is a history of lumbar spine surgery.)
   A. No red flags and failure to respond to conservative medical management consisting of either treatment with anti-inflammatory medication or muscle relaxants for at least 4 weeks or oral steroids or a series of epidural or transforaminal injections
   B. Symptoms worsening while under treatment described in A

II. **Trauma**\(^6\) [One of the following]
   A. Suspected distal cord or cauda equina injury (MRI of the thoracic spine is preferred.)
      1. Saddle anesthesia
      2. Profound sensory deficit
      3. Bowel or bladder dysfunction
      4. Severe motor deficit (Objective weakness on exam that is 3/5 or less
      5. Diminished rectal sphincter tone
      6. Bilateral radiculopathy
      7. Neurogenic claudication
   B. Signs or symptoms suggesting injury to a specific spine level
   C. Findings suggesting acute myelopathy
D. Any other documented fracture of the spine
E. Fracture by x-ray

III. **Radiculopathy** with symptoms for at least 4 weeks (Contrast should be used if there is a history of lumbar spine surgery.) [Both A and B]

A. Clinical findings [One of the following]
   1. Motor disturbances [One of the following]
      a. Hyporeflexia
      b. Atrophy
      c. Weakness objective (objective weakness on exam that is 3/5 or less)
   2. Sensory disturbances [One of the following]
      a. Pain in nerve root distribution
      b. Numbness
      c. Paresthesias (tingling sensations)
      d. Dysesthesias (burning sensations)
      e. Neurogenic claudication
   3. Straight-leg raising reproduces the pain between 30 and 70 degrees of leg elevation
   4. Crossed straight-leg raise test (Lasegue’s sign) reproduces the pain at 30 to 70 degrees of leg elevation

B. No red flags and failure to respond to conservative medical management consisting of either treatment with anti-inflammatory medication or muscle relaxants for at least 4 weeks; or oral steroids or a series of epidural or transforaminal injections or symptoms worsening while under treatment

IV. **Suspected spinal stenosis with symptoms for at least 4 weeks** (Contrast should be used if there is a history of lumbar spine surgery.) [One of the following]

Presence of red flags waives any conservative management requirements.

A. Clinical findings and/or symptoms with no red flags; failure to respond to conservative medical management consisting of either treatment with anti-inflammatory medication or muscle relaxants for at least 4 weeks; or oral steroids or a series of epidural or transforaminal injections [One of the following]
   1. Bilateral leg pain
   2. Bilateral buttock pain
   3. Paresthesias
   4. Tingling
   5. Dull fatigue in the thigh and leg
   6. Objective measure of weakness [3 out of 5 or more severe]
   7. Neurogenic claudication

B. Symptoms increase while under treatment in A

V. **Suspected cauda equina syndrome** (Contrast is indicated if there is a suspicion of tumor or infection.)

A. Sudden unexplained onset of [One of the following]
   1. Saddle anesthesia
   2. Profound sensory deficit
3. Bowel or bladder dysfunction
4. Severe motor deficit (objective weakness on exam that is 3/5 or less)
5. Diminished rectal sphincter tone
6. Bilateral radiculopathy
7. Neurogenic claudication

VI. Suspected meningocele or myelomeningocele
   A. Congenital
   B. After lumbar surgery

VII. Evaluation of scoliosis [One of the following]
   A. Preoperative assessment
   B. Any neurologic finding in the presence of scoliosis
   C. Atypical curve pattern
   D. Congenital scoliosis
   E. Neurofibromatosis
   F. Marfan's syndrome

VIII. Tethered cord [One of the following]
   A. Documented Arnold-Chiari malformation
   B. Symptoms [One of the following]
      1. Low back and leg pain worst in the morning
      2. Spastic gait
      3. Hair tuft
      4. Dimple
      5. Hemangioma
      6. Incontinence
      7. Scoliosis
      8. Weakness of lower extremity

IX. Suspected tumor of vertebra or bone [One of the following]
    A. Primary or metastatic bone tumor [Gadolinium not required if there are no neurological signs or symptoms] [One of the following]
       1. Known malignancy with lumbar spine pain
       2. Follow-up primary or metastatic bone tumor confirmed on prior imaging study
       3. New or worsening pain at site of known bone tumor
       4. Periodic assessment not more frequently than every 3 months unless there are new signs or symptoms during chemotherapy, radiation therapy, or after surgery for bone tumor
       5. New onset scoliosis
       6. New onset kyphosis

X. Evaluation for possible vertebroplasty
   A. Painful osteoporotic or neoplastic compression fracture or microfracture documented by MRI and/or a lytic lesion on CT without decreased height of a vertebra which is refractory to medical therapy as defined as one of the following
1. Pain from a weakened or fractured vertebral body that renders an individual nonambulatory despite 24 hours of analgesic therapy
2. Pain from a weakened or fractured vertebral body that prevents an individual from participating in physical therapy despite 24 hours of analgesic therapy
3. Member with weakened or fractured vertebra that develops confusion, sedation or constipation from analgesic therapy

XI. Infection (MRI without and with contrast is the proper study.)

XII. Injection of contaminated steroids

References:

Additional references for Medicare:

22. Local Coverage Determination (LCD) for Magnetic Resonance Imaging (L28723), Wisconsin Physicians Service Insurance Corporation, Michigan, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=27&CntrctrType=1%7c9&KeyWord=72148&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=72148&kq=true&bc=IAAAAAAAA.&

23. Local Coverage Determination (LCD) for Magnetic Resonance Imaging (L28723), Wisconsin Physicians Service Insurance Corporation, Nebraska, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=36&CntrctrType=1%7c9&KeyWord=72148&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=72148&kq=true&bc=IAAAAAAAA.&

24. Local Coverage Determination (LCD) for Magnetic Resonance Imaging (L28723), Wisconsin Physicians Service Insurance Corporation, Missouri, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=29&CntrctrType=1%7c9&KeyWord=72148&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=72148&kq=true&bc=IAAAAAAAA.&

25. Local Coverage Determination (LCD) for Magnetic Resonance Imaging (L28723), Wisconsin Physicians Service Insurance Corporation, Iowa, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=17&CntrctrType=1%7c9&KeyWord=72148&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=72148&kq=true&bc=IAAAAAAAA.&

26. Local Coverage Determination (LCD) for Magnetic Resonance Imaging (L28723), Wisconsin Physicians Service Insurance Corporation, Minnesota, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=28&CntrctrType=1%7c9&KeyWord=72148&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=72148&kq=true&bc=IAAAAAAAA.&


Red Flags
If any of the following are part of the clinical history presented with a request for pre-certification of these CPT codes, the need to meet criteria concerning prior conservative management is waived and the examinations should be pre-certified if other criteria are met:
- History of cancer
- Unexplained weight loss
- Immunocompromised
- IV drug use
- Abnormal CBC, ESR
- Urinary tract infections
- Urinary retention
- Urinary incontinence
- Decreased anal sphincter tone
- Aural temperature > 38.3°C or >100.9°F
- Saddle anesthesia
- Major motor weakness of a limb
- Trauma (This is age-dependent; lesser trauma required in older patients.)

I. Back pain\(^1-6\) lasting more than 6 weeks with a history of lumbar spine surgery (Contrast should be used if there is history of lumbar spine surgery.) [One of the following]
   A. No red flags and failure to respond to conservative medical management consisting of either treatment with anti-inflammatory medication or muscle relaxants for at least 4 weeks or oral steroids or a series of epidural or transforaminal injections
   B. Symptoms worsening while under treatment described in A

II. Radiculopathy\(^1-6\) lasting for at least 4 weeks with a history of lumbar spine surgery (Contrast should be used if there is history of lumbar spine surgery.) [One of the following]
   Presence of red flags waives any conservative management requirements.
   A. Clinical findings and/or symptoms with no red flags; failure to respond to conservative medical management consisting of either treatment with anti-inflammatory medication or muscle relaxants for at least 4 weeks; or oral steroids or a series of epidural or transforaminal injections [One of the following]
      1. Motor disturbances [One of the following]
         a. Hyporeflexia
         b. Muscle atrophy
         c. Objective weakness (3 out of 5 or more severe)
      2. Sensory disturbances [One of the following]
a. Pain in nerve root distribution
b. Numbness
c. Tingling sensations (paresthesias)
d. Burning sensations (dysesthesias)
e. Shooting pain
f. Neurogenic claudication

3. Straight leg raising reproduces the pain between 30 and 70 degrees of leg elevation
4. Crossed straight leg raise test (Lasegue's sign) reproduces the pain at 30 to 70 degrees of leg elevation

B. Symptoms worsening while under treatment as described in A

III. Suspected spinal stenosis with symptoms for at least 4 weeks (Contrast should be used if there is history of lumbar spine surgery.)

Presence of red flags waives any conservative management requirements.

A. Clinical findings and/or symptoms with no red flags; failure to respond to conservative medical management consisting of either treatment with anti-inflammatory medication or muscle relaxants for at least 4 weeks; or oral steroids [One of the following]
   1. Bilateral leg pain
   2. Bilateral buttock pain
   3. Paresthesias
   4. Tingling
   5. Burning
   6. Dysesthesias
   7. Dull fatigue in the thigh and leg
   8. Objective measure of weakness (3/5 or less)
   9. Neurogenic claudication
   10. Symptoms increase with walking or standing and relieved by sitting or lying down

B. Symptoms worsening while under treatment as described in A

IV. Suspected cauda equina syndrome (Contrast is indicated if there is suspicion of tumor or infection.)

A. Sudden unexplained onset of [One of the following]
   1. Saddle anesthesia
   2. Profound sensory deficit
   3. Bowel or bladder dysfunction
   4. Severe motor deficit (objective weakness on exam that is 3/5 or less)
   5. Diminished rectal sphincter tone
   6. Bilateral radiculopathy
   7. Neurogenic claudication

B. Symptoms worsening while under treatment as described in A

V. Suspected tumor of leptomeninges [One of the following]

A. Pain with known malignancy and neurologic findings
B. Hyperreflexia
C. Weakness of the upper or lower extremity
D. Spasticity
E. Bladder or bowel dysfunction
F. Sensory deficit
G. New onset scoliosis
H. Spastic gait
I. Periodic assessment during or after chemotherapy or radiation therapy for known tumor in the spinal canal not more frequently than every 3 months unless there are new signs or symptoms

VI. **Infection (including osteomyelitis and discitis and epidural abscess)**\textsuperscript{10-14} [One of the following]

A. Osteomyelitis [One of the following]
   1. Laboratory findings [One of the following]
      a. Aural temperature $> 38.3^\circ C$ or $>100.9^\circ F$
      b. WBC $> 11,500$/cu.mm
      c. ESR $> 20$mm/hr
      d. C-reactive protein $> 10$ mg/L
      e. Blood culture positive
   2. History of infection elsewhere
   3. History of diabetes, dialysis or peripheral vascular disease
   4. X-ray suggestive of osteomyelitis
   5. Sinus tract, poor wound or fracture healing
   6. History of penetrating injury or surgery

B. Pre-operative evaluation of osteomyelitis

C. Follow-up during or after therapy for osteomyelitis, epidural abscess or disc space infection [One of the following]
   1. New or worsening pain at site or neurologic signs or symptoms
   2. Periodic evaluation of response to therapy

D. Suspected epidural abscess or disc space infection (MRI with gadolinium is strongly preferred.) [All]
   1. Progressive neurological symptoms [One of the following]
      a. Radiating nerve root pain
      b. Muscle weakness
      c. Sensory deficit
   2. Risk factors [One of the following]
      a. Trauma
      b. Prior spinal procedure
      c. Infection elsewhere
      d. IV drug use
      e. Diabetes
      f. Immunosuppression
   3. Clinical and laboratory findings [One of the following]
      a. Aural temperature $> 38.3^\circ C$ or $>100.9^\circ F$
      b. WBC $> 11,500$/cu.mm
      c. ESR $> 20$ mm/hr
      d. C-reactive protein $> 10$ mg/L
      e. Blood culture positive

E. Follow-up during therapy for epidural abscess or disc space infection [One of the following]
   1. New or worsening pain at site or neurologic signs or symptoms
2. Periodic evaluation of response to therapy

VII. Injection of contaminated steroids

References:

16. Local Coverage Determination (LCD) for Magnetic Resonance Imaging (L28723), Wisconsin Physicians Service Insurance Corporation, Michigan, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=27&CntrctrType=1%7c9&KeyWord=72149&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=72149&kg=true&bc=IAAAAAAAA.&
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22. Local Coverage Determination (LCD) for Magnetic Resonance Imaging (L28723), Wisconsin Physicians Service Insurance Corporation, Wisconsin, accessed at [http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=57&CntrctrType=1%7c9&KeyWord=72149&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=72149&kq=true&bc=IAAAAAAAAG

**72149, 72158 MRI Lumbar Spine**

Clinical criteria reviewed/revised: 7/26/12, 8/26/11, 11/17/10, 9/16/09, 3/18/09

Medical Advisory Committee reviewed and approved: 9/19/12, 6/27/12, 9/21/11
This procedure is not a covered benefit for this health plan.
72159  MRA of the Spinal Canal

TN

I.  Dural arteriovenous fistula (DAVF) suspected on MRI\textsuperscript{1-3}
    A.  Must have copy of MRI report indicating the above

II. Spinal arteriovenous malformation (AVM)\textsuperscript{3,4}
    A.  Suspected on recent MRI, must have copy of report
    B.  Follow up after treatment

References:

This procedure is not a covered benefit for Medicare beneficiaries.

References:

1. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L32611), Novitas Solutions, Inc., Arkansas, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=3&CntrctrType=1%7c9&KeyWord=72159&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=72159&qk=true&bc=IAAAAAAA&A&.
4. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L32611), Novitas Solutions, Inc., District of Columbia, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=10&CntrctrType=1%7c9&KeyWord=72159&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=72159&qk=true&bc=IAAAAAAA&A&.
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7. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L32611), Novitas Solutions, Inc., Louisiana, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=23&CntrctrType=1%7c9&KeyWord=72159&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=72159&qk=true&bc=IAAAAAAA&A&.
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11. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L32611), Novitas Solutions, Inc., Mississippi, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=31&CntrctrType=1%7c9&KeyWord=72159&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=72159&qk=true&bc=IAAAAAAA&A&.
13. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L31399), Novitas Solutions, Inc., New Jersey, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=38&CntrctrType=1%7c9&KeyWord=72159&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=72159&kq=true&bc=IAAAAAAADAAA.&


17. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L31399), Novitas Solutions, Inc., Pennsylvania, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=45&CntrctrType=1%7c9&KeyWord=72159&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=72159&kq=true&bc=IAAAAAAADAAA.&

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72159 MRA Spinal Canal: Medicare

Clinical criteria reviewed/revised: 7/26/12, 8/27/11, 11/17/10
Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
CTA of the Pelvis

Note: For evaluation of PVD, the appropriate CPT code is 75635 (CTA abdominal aorta with runoff) rather than either CTA abdomen or CTA pelvis.

I. Suspected occlusion or stenosis of iliac or femoral arteries\(^1\,^6\) (75635 is the appropriate code.)

II. Aortic aneurysm or aneurysm of the pelvic arteries (including mycotic aneurysm)\(^1\,^2\,^7\,^7\,^13\) (CTA of the abdomen and pelvis 74174 is the appropriate code.)

III. Suspected pelvic AVM\(^1\,^14\) [One of the following]
   A. Pulsatile pelvic mass
   B. Incidental finding on prior imaging including ultrasound
   C. Pelvic pain

IV. Pelvic trauma with suspected vascular injury

V. Uterine fibroid embolization\(^1\)
   A. Pre-embolization evaluation

VI. Evaluation of renal transplant for suspected renal artery stenosis [A and B]
   A. New onset of hypertension
   B. Rising renal function tests

VII. Intestinal angina or chronic mesenteric ischemia (CTA of the abdomen and pelvis 74174 is the appropriate code.)\(^1\,^2\,^15\,^21\)

VIII. Ischemic colitis\(^20\,^21\) (CTA of the abdomen and pelvis 74174 is the appropriate code.)

IX. Evaluation of pelvic veins\(^1\) [One of the following]
   A. Suspicion of iliac vein thrombus
      1. Indeterminate Duplex venous ultrasound which includes evaluation of phasic respiratory signals and swelling of the entire leg
   B. Suspicion of inferior vena cava thrombus
      1. Bilateral leg swelling
   C. May-Thurner Syndrome
      1. Swelling and pain of the left leg not explained by venous ultrasound including Duplex venous ultrasound
X. Suspected dissection of the aorta\textsuperscript{1,22-24} (CTA of the abdomen and pelvis 74174 is the appropriate code.)

XI. Peripheral arterial vascular disease (75635 is the appropriate code.)\textsuperscript{1,6}

Note: For evaluation of PVD, unlike with MRA studies, the appropriate CPT code is 75635 (CTA abdominal aorta with runoff) rather than either CTA abdomen or CTA pelvis.

References:


Additional references for Medicare:

24. Local Coverage Determination (LCD) for Computerized Tomography (CAT Scans) (L28544), Wisconsin Physicians Service Insurance Corporation, Iowa, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&P policyType=Final&S=17&CntrctrType=1%7c9&KeyWord=72191&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=72191&kq=true&bc=IAAAAAA


26. Local Coverage Determination (LCD) for Computerized Tomography (CAT Scans) (L28544), Wisconsin Physicians Service Insurance Corporation, Kansas, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&P policyType=Final&S=21&CntrctrType=1%7c9&KeyWord=72191&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=72191&kq=true&bc=IAAAAAA

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72191 CTA of the Pelvis

Clinical criteria reviewed/revised: 6/18/12, 10/12/11, 8/21/11, 11/17/10, 12/09, 1/21/09

Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
72192 CT of the Pelvis without Contrast
72193 CT of the Pelvis with Contrast
72194 CT of the Pelvis without and with Contrast

Note: For radiation therapy planning use 77014
For cyber knife planning use 77014
For CT guided needle placement, biopsy or drainage use 77012
For CT guided tissue ablation use 77013

If there is a note next to an indication stating that CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178) please refer to CPT codes 74176, 74177 and 74178

I. Complaints associated with abdominal or pelvic pain\textsuperscript{1-11} [CT of the abdomen and pelvis, 74176 or 74177 or 74178 is the appropriate code]

II. Evaluation of symptoms after any abdominopelvic surgery\textsuperscript{1} [CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178) unless this is a follow up for a known complication that is localized to the pelvis]

III. Aneurysm\textsuperscript{12-20} [CTA of the abdomen and pelvis (CPT code 74174) is the appropriate study]

IV. Obstruction of bowel [CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178)]\textsuperscript{21-23}

V. Known cancer including lymphoma other than pelvic cancer (except head and neck cancer)\textsuperscript{24-67} [CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178)]

VI. Diverticulitis, suspected or known in a patient with lower abdominal pain and/or mass\textsuperscript{4,5} [CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178 except for follow up of known diverticulitis)]

VII. Appendicitis\textsuperscript{6,7} [In children and pregnant women, ultrasound is preferred as the initial study. If this is not possible then CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178 except for follow up of known appendicitis with suspected complications)]
VIII. Suspected pelvic abscess, pelvic inflammatory disease (PID)\textsuperscript{1} with non-diagnostic ultrasound [One of the following]
A. Symptoms [One of the following]
   1. Lower abdominal pain
   2. Chills
   3. Menstrual disturbances
   4. Cervical and adnexal tenderness
B. Objective findings [One of the following]
   1. Local pelvic tenderness
   2. Aural temperature > 38.3 °C or 100.9°F
   3. Leukocytosis, WBC > 11,500/cu.mm
   4. Purulent cervical discharge

IX. Follow-up of known pelvic abscess or fistula during or after treatment [One of the following]
A. Follow up evaluation at completion of treatment
B. Evaluation prior to removal of drain

X. Hematuria\textsuperscript{3,68,69} [CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178)]

XI. Complex ovarian, adnexal or other pelvic mass found on imaging or physical examination [MRI is strongly preferred unless contraindicated. Transabdominal and/or transvaginal imaging must be done and be indeterminate prior to MRI or CT]\textsuperscript{70}

XII. Urethral diverticulum and ultrasound fails to demonstrate a diverticulum\textsuperscript{71,72} [MRI strongly preferred; CT should not be used unless MRI is contraindicated. CT virtual endoscopy may be used if MRI is not feasible.] [One of the following]
A. Incontinence
B. Urinary frequency, urgency, burning on urination, dysuria
C. Dribbling, dyspareunia

XIII. Lumbosacral plexopathy with MRI or CT of the LSS non diagnostic and MRI of the pelvis is contraindicated\textsuperscript{73-75} (MRI is strongly preferred) [One of the following]
A. Leg numbness or weakness in distribution of more than one nerve root
B. Fasciculations
C. Muscle atrophy
D. Meralgia Paresthetica (pain, paresthesia, and sensory loss in the lateral aspect of the thigh)
E. Suspected pelvic mass with back pain radiating to the leg(s)
F. History of pelvic radiation [One of the following]
   1. Paresthesias
   2. Sensory loss
3. Leg weakness

XIV. Suspected sacral or pubic fracture\textsuperscript{76-79} [One of the following] (MRI is strongly preferred)
   A. Suspected sacral fracture [One of the following]
      1. Sacral pain with a single fracture of the pelvic ring
      2. Sacral pain not responsive to NSAIDs and activity modification for three or more weeks
   B. Osteopenic or osteoporotic patient with chronic sacral or pubic pain
   C. Post radiation therapy patient with chronic sacral or pubic pain

XV. Suspected inguinal hernia with negative physical examination and negative ultrasound\textsuperscript{80-83} [One of the following]
   A. Inguinal pain or discomfort (usually unilateral) [One of the following]
      1. Worsened by straining or lifting
      2. Worsened by prolonged standing
   B. Strangulation (more common with femoral hernias) [One of the following]
      1. Colicky pain abdominal pain
      2. Palpable mass
      3. Signs of intestinal obstruction
   C. After previous hernia surgery with either persistent pain or suspicion of recurrent hernia

XVI. Fever of unknown origin (FUO)\textsuperscript{84} [CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178)]

XVII. Abdominal and pelvic trauma\textsuperscript{85-87} [CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178)]

XVIII. Cryptorchidism (undescended testicle) [MRI is strongly preferred unless contraindicated. The correct procedure is MRI of the abdomen and pelvis. If CT must be used because the MRI is contraindicated it should be of the abdomen and pelvis]\textsuperscript{88-90}

XIX. Crohn’s Disease and Inflammatory Bowel Disease\textsuperscript{8,9,92,93} [CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178)]

XX. CT enterography\textsuperscript{8,9,91,92} [CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178)]

XXI. Suspected or known dissection of the aorta\textsuperscript{93-96} [CTA of the abdomen and pelvis is the appropriate study]

XXII. Weight loss\textsuperscript{97} [CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178)]
XXIII. Kidney or renal stones\(^3\) [CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178)]

XXIV. Abdominal distention on physical examination [CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178)]

XXV. Soft tissue mass of the abdominal wall\(^98\)

XXVI. Suspected or known neuroendocrine tumor including carcinoid, pheochromocytoma, paraganglioma, islet cell tumor of the pancreas, poorly differentiated or high grade or aggressive small cell tumor other than\(^56\) [CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178)]

XXVII. Unilateral leg edema\(^99\) [CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178)]

XXVIII. Anal cancer\(^46\) [CT of the abdomen and pelvis is the appropriate study, CPT code 74176, or 74177 or 74178]\(^46\)

XXIX. Bladder cancer\(^24,47\) [CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178) except for A]
   A. High grade or sessile tumor prior to TURBT

XXX. Breast cancer\(^48\) [CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178)]\(^48\)

XXXI. Cervical cancer\(^50\) [One of the following]
   A. Initial staging for clinical stage IB2 or higher
   B. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Bowel obstruction by KUB
      8. Rectal bleeding
      9. Vaginal bleeding
      10. Hematuria
      11. New onset of hydronephrosis
      12. Lab values elevated/increasing [One of the following]
         a. New onset of BUN >20mg/dL
         b. New onset of creatinine >1.5mg/dL
XXXII. Colon cancer\textsuperscript{25,51} [CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178)]

XXXIII. Anal cancer\textsuperscript{46} [CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178)]

XXXIV. Rectal cancer\textsuperscript{52} [CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178)]

XXXV. Esophageal cancer\textsuperscript{54} [Usually CT of the abdomen is the appropriate study.]

XXXVI. Gastric cancer\textsuperscript{55} [Usually CT of the abdomen is the appropriate study but CT of the abdomen and pelvis (CPT codes 74176, or 74177 or 74178) should be performed as clinically indicated]

XXXVII. Hodgkin’s lymphoma\textsuperscript{28,32,61} [CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178)]

XXXVIII. Non-Hodgkin’s lymphoma\textsuperscript{28,34,35,62} (follicular lymphoma, marginal zone lymphoma, MALT lymphoma, mantle cell lymphoma, diffuse large B-cell lymphoma, Burkitt’s lymphoma, peripheral T-cell lymphoma, mycosis fungoides, hairy cell leukemia, post-transplant lymphoproliferative disorders, CLL/SLL) [CT of the abdomen and pelvis is the appropriate study (CPT code 74176, or 74177 or 74178)]

XXXIX. Renal cell carcinoma or kidney cancer\textsuperscript{29,59} [CT of the abdomen and pelvis is the appropriate study, CPT code 74176, or 74177 or 74178]

XL. Carcinoid\textsuperscript{56} [CT of the abdomen and pelvis is the appropriate study, CPT code 74176, or 74177 or 74178]

XLI. Poorly differentiated or high grade or anaplastic small cell carcinoma other than lung\textsuperscript{56} [CT of the abdomen and pelvis is the appropriate study, CPT code 74176, or 74177 or 74178]

XLII. Ovarian cancer, fallopian tube cancer and primary peritoneal cancer\textsuperscript{39,53} [CT of the abdomen and pelvis is the appropriate study, CPT code 74176, or 74177 or 74178]

XLIII. Pancreatic cancer\textsuperscript{41,42} [CT of the abdomen and pelvis is the appropriate study CPT code 74176, or 74177 or 74178]
XLIV. Testicular cancer (CT of the abdomen and pelvis is the appropriate study, CPT code 74176, or 74177 or 74178)

XLV. Prostate cancer

A. Biopsy positive and life expectancy of more than 5 years
B. Pre treatment T1-2 and Gleason score >7 and PSA >20 or 50% or more of core biopsies positive for cancer
C. Pre treatment clinical T3 with either seminal vesicle or bladder neck invasion
D. Following radical prostatectomy with rising PSA on 2 or more tests
E. Immediately after radical prostatectomy with PSA detectable
F. Following radiation therapy with either rising PSA or positive digital rectal examination and candidate for local therapy
G. Following treatment with androgen deprivation therapy and rising P

References:


77. Cooper, J, Pelvic ring injuries, Trauma, 2006; 6:95-100.


Additional References for Medicare


72192, 72193, 72194 CT of the Pelvis

Clinical criteria reviewed/revise:d: 7/26/12, 4/16/12, 8/27/11, 11/17/10, 5/26/10, 1/18/09

Medical Advisory Committee reviewed and approved: 9/19/12, 6/27/12, 9/21/11
72192  CT of the Pelvis without Contrast
72193  CT of the Pelvis with Contrast
72194  CT of the Pelvis without and with Contrast

Medicare AL, GA, TN

Note: For radiation therapy planning use 77014. For CT guided needle placement, biopsy or drainage use 77012. For CT guided tissue ablation use 77013.

I. Complaints associated with abdominal or pelvic pain (CT of the abdomen and pelvis, 74176 or 74177 or 74178, is the appropriate code.)

II. Abdominal or pelvic mass

III. Evaluation of abdominal or pelvic fluid collection

IV. Clarification of findings on other imaging

V. Clarification of abnormal laboratory results

VI. Congenital anomaly of abdominal or pelvic organs

VII. Known cancer – primary or metastatic cancer (CPT codes 74176, 74177 and 74178 are strongly preferred except for cervical cancer.)

VIII. Cervical cancer[^4] [One of the following]
   A. Initial staging for clinical stage IB2 or higher
   B. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Bowel obstruction by KUB
      8. Rectal bleeding
      9. Vaginal bleeding
      10. Hematuria
      11. New onset of hydronephrosis
      12. Lab values elevated/increasing [One of the following]
         a. New onset of BUN >20mg/dL
13. New onset of creatinine >1.5mg/d

IX. Diverticulitis, suspected or known in a patient with lower abdominal pain and/or mass

X. Appendicitis (In children and pregnant women, ultrasound is preferred as the initial study. If this is not possible then CT of the abdomen and pelvis is the appropriate study [CPT code 74176 or 74177 or 74178] except for follow-up of known appendicitis with suspected complications.)

XI. Suspected abdominal or pelvic abscess, pelvic inflammatory disease (PID)

XII. Follow-up of known pelvic abscess or fistula during or after treatment

XIII. Known abdominal or pelvic tumor for staging or restaging after completion of therapy (See CPT codes 74176, 74177 and 74178.)

XIV. Hematuria

XV. Abdominal and pelvic trauma

XVI. Suspected dissection of the aorta (CTA of the abdomen and pelvis is preferred.)

XVII. Kidney or renal stones (CT of the abdomen and pelvis is the appropriate study [CPT code 74176 or 74177 or 74178].)

XVIII. Soft tissue mass of the abdominal wall

XIX. Radiation therapy planning
   A. Diagnostic CT is not medically necessary for radiation therapy field planning. Use code 77014.

XX. Aneurysm (CTA of the abdomen and pelvis [CPT code 74174] is the appropriate study.)
References:


2. Local Coverage Determination (LCD) for Radiology: Computed Tomography of the Abdomen and Pelvis (L30048), Cahaba Government Benefit Administrators, LLC, Georgia. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&PolicyType=Final&s=1&CnttrctType=1%7c9&KeyWord=72192&KeyWordSearchType=Exact&CptHcpcsCode=72192&kq=true&bc=IAAAAAAAAAAA&.


72192, 72193, 72194 CT of the Pelvis: Medicare AL, GA, TN

Clinical criteria reviewed/revised: 12/12/12, 8/27/11, 11/17/10, 1/20/10
Medical Advisory Committee reviewed and approved: 12/12/12, 9/19/12, 9/21/11
I. Mass detected by other means  
   A. Ultrasound nondiagnostic or not feasible

II. Adenomyosis\textsuperscript{1-4}  
   A. Abnormal uterine bleeding  
   B. Painful menses  
   C. Chronic pelvic pain  
   D. Impaired fertility  
   E. Uterine enlargement by US

III. Endometriosis\textsuperscript{5-11} suspected and equivocal ultrasound and suspected rectovaginal or bladder ultrasound [Symptoms and findings or C]  
   A. Symptoms [One of the following]  
      1. Severe dysmenorrhea  
      2. Deep dyspareunia  
      3. Pain with voiding  
      4. Pain with defecation  
      5. Chronic pelvic pain (non-cyclic abdominal and pelvic pain for at least 6 months)  
      6. Ovulation pain  
      7. Infertility  
      8. Chronic fatigue  
   B. Findings [One of the following]  
      1. Pelvic tenderness  
      2. Fixed retroverted uterus  
      3. Tender utero-sacral ligaments or nodularity  
      4. Enlarged ovaries  
   C. Laparoscopy nondiagnostic for endometriosis or contraindicated

IV. Suspected congenital anal, vaginal or uterine anomaly (septate, bicornate, didelphic)\textsuperscript{12-14} [One of the following]  
   A. Pelvic pain  
   B. Irregular menses  
   C. Dysmenorrhea  
   D. Infertility  
   E. Repeated spontaneous abortions  
   F. Cervical septum  
   G. Hysterosalpingogram and US nondiagnostic or contraindicated
V. Cryptorchidism (undescended testicle) (MRI is strongly preferred unless contraindicated. The correct procedures are MRI of the abdomen and pelvis. If CT must be used because the MRI is contraindicated it should be of the abdomen and pelvis.)\textsuperscript{15-17} [Both]
   A. Testicle not palpable
   B. Abdominal and pelvic US nondiagnostic for undescended testicle

VI. Known or suspected tumor including lymphoma\textsuperscript{18-53} (CT is strongly preferred and should be performed unless there is a definite documented contraindication.) [One of the following]
   A. Initial staging prior to treatment
      1. Lymphoma including primary CNS lymphoma, Hodgkin's disease and non-Hodgkin's lymphoma (a separate diagnostic CT is not medically necessary if it was done as part of the PET/CT)
      2. Bladder cancer [One of the following]
         a. High grade or sessile tumor prior to TURBT
         b. Muscle invasion
      3. Rectal cancer
      4. Anal cancer
      5. Colon cancer
      6. Cervical cancer
         a. Initial staging for clinical stage IB2 or higher
   7. Breast cancer (This may be done in addition to PET/CT when that study is indicated.)
      a. Clinical stage I–IIB [One of the following]
         i. Alkaline phosphatase >140 U/L and/or
         ii. Total bilirubin >1 mg/L and/or
         iii. GGT > 42 IU/L and/or
         iv. AST >40 IU/L and/or
         v. Palpable abdominal mass
         vi. Abdominal pain
      8. Prostate cancer (see XIII below)
      9. Carcinoid
      10. Kidney or renal cell cancer
      11. Esophageal cancer
      12. Gastric cancer
      13. Soft tissue sarcoma involving the retroperitoneum, pelvis or abdomen
      14. Endometrial cancer
      15. Uterine sarcoma
      16. Bone tumor arising in the pelvis
      17. Transitional cell carcinoma of the ureter
      18. Ovarian cancer
      19. Testicular cancer both seminoma and non seminoma
   B. New or worsening clinical data reported [One of the following] (CT of the abdomen and pelvis is the preferred study.)
      1. Anorexia
      2. Weight loss
3. Abdominal or pelvic pain
4. Abdominal or pelvic mass
5. Hepatomegaly
6. Ascites
7. Bowel obstruction by KUB
8. Pelvic or lower extremity pain
9. Leg weakness or numbness
10. Hematuria
11. Rectal bleeding
12. Vaginal bleeding
13. New or worsening hydronephrosis
14. New onset of renal insufficiency [One of the following]
   a. New onset of BUN > 20 mg/dL
   b. New onset of creatinine > 1.5 mg/dL
15. Lab values elevated/increasing [One of the following]
   a. Elevated CEA (>2.5 in non smoker and > 5.0 in smoker) on two consecutive tests
   b. Rising bilirubin (Total bilirubin > 1.9 mg/dL)
   c. Alkaline phosphatase > 120 IU/L
   d. Rising CA 19-9 (pancreatic cancer) > 120 IU/ml
   e. Rising CA125 > 35 U/ml
   f. Rising PSA on 2 consecutive tests > 4 ng/ml

VII. Evaluation before or after uterine artery embolization (also known as uterine fibroid embolization [UFE])[^54-57] [One of the following]
   A. Patients selected for uterine artery embolization (UAE) may be approved for preoperative MRI to allow planning of the procedure
      1. Postoperatively if there is [One of the following]
         a. Bleeding
         b. Aural temperature > 38.3°C or 100.9°F
         c. Prolonged pain
   B. Post embolization for evaluation of results including establishing a new baseline for size of fibroids following the procedure

VIII. Evaluation before or after uterine myomectomy[^58] [One of the following]
   A. Preoperative planning
   B. Postoperatively if there is:
      1. Bleeding
      2. Aural temperature > 38.3°C or 100.9°F
      3. Prolonged pain

IX. Urethral diverticulum[^59-63] [One of the following]
   A. Tender cystic swelling protruding from the vagina
   B. Urinary frequency, urgency, burning on urination, dysuria
   C. Dribbling
   D. Dyspareunia
X. **Suspected sacral or pubic fracture** [One of the following]
   A. Normal x-ray but bone scan non specific and positive
   B. Elderly individual with normal x-ray and bone scan positive
   C. Normal x-ray with documented osteoporosis or long term steroid use
   D. Normal x-ray and bone scan in last 48 hours with documented osteoporosis or long term steroid use
   E. Post radiation therapy to the pelvis with sacral or pubic pain

XI. **Suspected sacroiliitis with low back pain or pain over the sacroiliac joints and no improvement after at least 4 weeks of conservative medical management with anti-inflammatory medication or muscle relaxants** [One of the following]
   A. Positive Patrick’s test
   B. Lower back pain radiating to ipsilateral groin

XII. **Lumbosacral plexopathy with a lumbar spine MRI that does not explain the etiology of the pain** [One of the following]
   A. Leg numbness or weakness in distribution of more than one nerve root
   B. Leg fasciculations
   C. Muscle atrophy
   D. Meralgia paresthetica (pain, paresthesia, and sensory loss in the lateral aspect of the thigh)
   E. Suspected pelvic mass with back pain radiating to the leg(s)
   F. History of pelvic radiation [One of the following]
      1. Paresthesias
      2. Unilateral or bilateral sensory loss in the lower extremities
      3. Unilateral or bilateral weakness of the lower extremities
      4. Bowel or bladder incontinence

XIII. **Prostate cancer** [One of the following]
   A. Mass detected on digital rectal examination or PSA > 3.5 and transrectal ultrasound not possible or not diagnostic
   B. Biopsy positive and life expectancy of more than 5 years
   C. Pre treatment T1-2 and Gleason score >7 and PSA >20 or 50% or more of core biopsies positive for cancer
   D. Pre treatment clinical T3 with either seminal vesicle or bladder neck invasion
   E. Following radical prostatectomy with rising PSA on 2 or more tests
   F. Immediately after radical prostatectomy with PSA detectable
   G. Following radiation therapy with either rising PSA or positive digital rectal examination and candidate for local therapy
   H. Following treatment with androgen deprivation therapy and rising PSA

XIV. **Suspected dissection of the thoracic aorta** [One of the following]
   A. Unequal blood pressure in the arms
   B. Rapid onset of “ripping, tearing, searing” severe chest or upper back or abdominal pain
   C. Syncope and chest pain
   D. Shortness of breath
E. CVA or stroke
F. Loss of pulses
G. Aortic insufficiency murmur
H. Marfan’s syndrome
I. Known aortic valve disease
J. Follow up of known dissection
1. 1 month after repair
2. 3 months after repair
3. 6 months after repair
4. 12 months after repair
5. Annually after 12 months
K. New symptoms after repair [One of the following]
1. Unequal blood pressure in the arms
2. Rapid onset of “ripping, tearing, searing, or sharp” severe chest or upper back or abdominal pain
3. Syncope and chest pain
4. Shortness of breath
5. CVA or stroke
6. Loss of pulses
7. Aortic insufficiency murmur

XV. Aneurysm
A. Suspected rupture of AAA [both]
1. New onset of mid-abdominal or back pain
2. Clinical findings [One of the following]
   a. Pulsatile or expansile mass
   b. Abnormal X-ray or US findings suggesting aortic aneurysm
   c. Falling blood pressure
B. Known AAA [One of the following]
1. Periodic follow-up of an asymptomatic known AAA will be according to the following schedule if there is an inadequate ultrasound and there has not been a surgical repair
   a. 2.5 -2.9 cm every 5 years
   b. 3.0 -3.4 cm every 3 years
   c. 3.5-3.9 cm every 2 years
   d. 4.0-4.4 cm every year
   e. 4.5-4.9 cm every 6 months
   f. 5.0 -5.5 cm every 3-6 months
2. New onset of pain
C. Postoperative evaluation following repair including endovascular repair (stent graft) [One of the following]
1. 1 month after repair
2. 3 months after repair
3. 6 months after repair
4. Annually after repair
5. Suspicion of endoleak
D. Aneurysm of any other intraabdominal artery detected on other imaging
E. Vascular insufficiency of the bowel (suspicions of) [One of the following]
1. Abdominal pain often starting as periumbilical and often out of proportion to exam findings
2. Other clinical findings [One of the following]
   a. Leukocytosis, WBC >11,500/cu.mm
   b. Stool positive for occult blood
   c. Nausea, vomiting or diarrhea
   d. History of abdominal angina (pain after eating for approximately 3 hours)
F. Planning for endovascular repair
G. Screening for aneurysm [ultrasound screening is the appropriate study. CTA or MRA should only be used if the aorta cannot be visualized adequately on US and this must be documented with the US report] [One of the following]
   1. Pulsatile mass with non diagnostic ultrasound
   2. History of first degree relative with an abdominal aortic aneurysm and non interpretable ultrasound
   3. Male age 65-75 with history of smoking
H. Pulsatile mass on abdominal, vaginal or rectal examination
   1. Relative with an abdominal aortic aneurysm and noninterpretable ultrasound

XVI. Evaluation of recurrent or complex anal fistula disease

XVII. Soft tissue mass of the abdominal wall (CT is preferred.)
   A. Abdominal x-ray

XVIII. MR enterography [One of the following]
   A. Bowel obstruction
   B. Celiac disease
   C. Complications of Crohn’s disease
      1. Abscess
      2. Fistula
      3. Small bowel obstruction
      4. Peri-anal fistula
      5. Stenosis
      6. Stricture
   D. Polyposis syndromes
   E. Small bowel tumor
   F. Suspected Crohn’s disease [One of the following]
      1. Aural temperature > 38.3°C or 100.9°F
      2. Diarrhea
      3. Weight loss
      4. Fatigue
      5. Crampy abdominal pain
      6. Perianal fistula or fissure
      7. Enterovesical fistula
      8. Enterovaginal fistula
      9. Enterocutaneous fistula
      10. Right lower quadrant tenderness
   G. Ulcerative colitis
XIX. **Breast cancer**[36]

A. Initial staging [One of the following]
   1. Clinical stage I–IIB [One of the following]
      a. Alkaline phosphatase > 140 U/L
      b. Total bilirubin > 1 mg/L
      c. GGT > 42 IU/L
      d. AST > 40 IU/L
      e. Palpable abdominal mass
      f. Abdominal pain
   2. Clinical stage IIIA or higher

B. Any evidence of breast cancer recurrence after treatment

C. Known metastatic disease [One of the following]
   1. Documented progression of disease
   2. Known metastatic disease following completion of treatment to establish new baseline

D. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. New onset of hydroureter
   9. Lab values elevated/increasing [One of the following]
      a. Rising CEA (>2.5 in non smoker and > 5.0 in smoker)
      b. Rising bilirubin (total bilirubin > 1.9mg/dL)
      c. Alkaline phosphatase > 125 U/L
      d. New onset of BUN > 20mg/dL

XX. **Cervical cancer**[21,37] [One of the following]

A. Stages IB2 and IIA2, IIB, IIIA, IVA

B. Restaging after completion of therapy

C. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. Rectal bleeding
   9. Vaginal bleeding
   10. Hematuria
   11. New onset of hydronephrosis
   12. New onset of renal insufficiency [One of the following]
      a. New onset of BUN > 20mg/dL
b. New onset of creatinine > 1.5mg/d

XXI. Colon cancer\textsuperscript{38} [One of the following]
A. Initial staging
B. Following treatment and no known metastases annually for 3-5 years
C. Known metastases - stable with no clinical change or laboratory changes such as rising tumor markers or elevated liver function tests
   1. Every 3-6 months for 2 years
   2. Every 6-12 months for up to 5 years
D. Rising CEA on 2 consecutive tests
   1. > 2.5 in non smokers
   2. > 5.0 in smokers
E. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. Rectal bleeding
   9. Vaginal bleeding
   10. Hematuria
   11. New onset of hydronephrosis
   12. New onset of renal insufficiency [One of the following]
      a. New onset of BUN >20mg/dL
      b. New onset of creatinine >1.5mg
   13. Lab values elevated/increasing [One of the following]
      a. Rising CEA (>2.5 in non smoker and >5.0 in smoker)
      b. Rising bilirubin (total bilirubin >1.9mg/dL)
      c. Alkaline phosphatase > 125 U/L
      d. Rising CA 19-9 >35 U/mL

XXII. Rectal cancer\textsuperscript{20,39} [One of the following]
A. Initial staging
B. Following treatment with no known metastases and stable [One of the following]
   1. Annually for 3-5 years
   2. Rising CEA (> 2.5 non smokers; > 5.0 smokers) if negative repeat in 3 months
C. Known non resectable metastases
   1. Following chemotherapy aimed at conversion to resectable disease may be done every 2 months to evaluate resectability
D. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
5. Hepatomegaly
6. Ascites
7. Bowel obstruction by KUB
8. Rectal bleeding
9. Vaginal bleeding
10. Hematuria
11. New onset of hydronephrosis
12. New onset of renal insufficiency [One of the following]
   a. BUN >20mg/dL
   b. Creatinine >1.5mg/dL
13. Lab values elevated/increasing
   a. Rising CEA (>2.5 in non smoker and >5.0 in smoker)
   b. Alkaline phosphatase > 125 U/L
   c. Rising bilirubin (total bilirubin >1.9mg/dL)
   d. Rising CA 19-9 >35 U/mL

XXIII. Ovarian cancer, fallopian tube cancer and primary peritoneal cancer\textsuperscript{24,32,40} [One of the following]
   A. Initial staging
   B. Following treatment and stable
   C. Rising CA-125 with or without prior chemotherapy
   D. Clinical relapse with or without prior chemotherapy
   E. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Bowel obstruction by KUB
      8. Rectal bleeding
      9. Vaginal bleeding
      10. Hematuria
      11. New onset of hydronephrosis
      12. New onset of renal insufficiency [One of the following]
         a. BUN > 20mg/dL
         b. Creatinine > 1.5mg/dL
      13. Lab values elevated/increasing [One of the following]
         a. Rising CEA (> 2.5 in non smoker and > 5.0 in smoker)
         b. Rising bilirubin (total bilirubin > 1.9mg/dL)
         c. Alkaline phosphatase > 140 U/L
         d. Rising CA 19-9 > 35 U/mL

XXIV. Esophageal cancer\textsuperscript{41} [One of the following]
   A. Initial staging
   B. Prior to chemoradiation if PET/CT not done
C. Clinical recurrence
D. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Dysphagia
   3. Weight loss
   4. Abdominal or pelvic pain
   5. Abdominal or pelvic mass
   6. Hepatomegaly
   7. Ascites
   8. Bowel obstruction by KUB
   9. Rectal bleeding
  10. Vaginal bleeding
  11. Hematuria
  12. New onset of hydronephrosis
  13. New onset of renal insufficiency [One of the following]
      a. BUN > 20mg/dL
      b. Creatinine > 1.5mg/dL
  14. Lab values elevated/increasing [One of the following]
      a. Rising bilirubin (total bilirubin > 1.9mg/dL)
      b. Alkaline phosphatase > 140 U/L
      c. New onset of BUN > 20mg/dL
      d. New onset of creatinine > 1.5mg/dL

XXV. Gastric (stomach) cancer^{42} [One of the following]
A. Initial staging
B. Following completion of treatment
C. Clinical recurrence
D. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. Rectal bleeding
   9. Vaginal bleeding
  10. Hematuria
  11. New onset of hydronephrosis
  12. New onset of renal insufficiency [One of the following]
      a. BUN > 20mg/dL
      b. Creatinine > 1.5mg/dL
  13. Lab values elevated/increasing [One of the following]
      a. Rising bilirubin (total bilirubin > 1.9mg/dL)
      b. Alkaline phosphatase > 140 U/L
XXVI. Carcinoid\textsuperscript{43} [One of the following]
A. Initial staging
B. Restaging after completion of therapy to establish a new baseline
C. Surveillance
   1. Carcinoid tumors larger than 2 cm or with incomplete resection and are stable with no
evidence of disease (CT of the abdomen and pelvis is preferred)
   2. Every 3-12 months after resection every 6-12 months
   3. Every 6-12 months thereafter
D. Abnormal laboratory tests suggesting recurrence [One of the following]
   1. Elevated urine 5HIAA > 15mg/24hr
   2. Elevated chromogranin A (CgA) > 39ng/L
   3. Elevated substance P > 270 ng/L or pg/mL

XXVII. Poorly differentiated or high grade or anaplastic small cell carcinoma other
than lung\textsuperscript{43} [One of the following]
A. Initial staging
B. Restaging after completion of therapy to establish a new baseline
C. Surveillance following treatment of resectable disease
   1. Every 3 months for a year
   2. Every 6 months after 1 year
D. Surveillance following treatment of unresectable or metastatic disease
   1. Every 3 months
E. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. Rectal bleeding
   9. Vaginal bleeding
   10. Hematuria
   11. New onset of hydronephrosis
   12. New onset of renal insufficiency [One of the following]
      a. BUN > 20mg/dL
      b. Creatinine > 1.5mg/dL
   13. Lab values elevated/increasing
      a. Rising bilirubin (total bilirubin > 1.9mg/dL)
      b. Alkaline phosphatase > 140 U/L

XXVIII. Hodgkin’s lymphoma\textsuperscript{25,45} [One of the following]
A. Initial staging in addition to PET/CT
B. Restaging while on treatment should be done with PET/CT
C. After treatment with radiation therapy restage with either CT or PET/CT if last PET scan was
   positive
D. Follow up after completion of radiation therapy treatment
E. Scan every 6-12 months for 2-5 years
F. Annual scan if there is increased risk for lung cancer (This is optional if none of the factors below are present.) [One of the following]
   1. Treatment with radiation therapy
   2. Treatment with non-alkylating agent chemotherapy
   3. Smoking history
G. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Night sweats
   8. Aural temperature > 38.3°C or 100.9°F
   9. Bowel obstruction by KUB
10. New onset of renal insufficiency [One of the following]
   a. BUN > 20mg/dL
   b. Creatinine > 1.5mg/dL
11. Lab values elevated/increasing
   a. Rising bilirubin (total bilirubin > 1.9mg/dL)
   b. Alkaline phosphatase > 140 IU/L
   c. BUN > 20mg/dL
   d. Creatinine > 1.5mg/dL

XXIX. Non Hodgkin's lymphoma\(^{25,28,29,46}\) (follicular lymphoma, marginal zone lymphoma, MALT lymphoma, mantle cell lymphoma, diffuse large B-cell lymphoma, Burkitt's lymphoma, peripheral T cell lymphoma, mycosis fungoides, hairy cell leukemia post-transplant lymphoproliferative disorders, CLL/SLL)
A. Initial staging in addition to PET/CT
B. Restaging after completion of therapy to establish a new baseline
C. Surveillance
   1. Not more frequently than every 6 months for the first 2 years and not more frequently than annually thereafter
D. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Night sweats
   8. Aural temperature > 38.3°C or 100.9°C
   9. Hydronephrosis
10. New onset of renal insufficiency [One of the following]
   a. BUN > 20mg/dL
   b. Creatinine > 1.5mg/dL

11. Bowel obstruction by KUB

12. Lab values elevated/increasing [One of the following]
   a. Rising bilirubin (total bilirubin > 1.9mg/dL
   b. Alkaline phosphatase > 140 Iu/L

XXX. Soft tissue sarcoma\(^{30,47}\) [One of the following]
   A. Myxoid/round cell liposarcoma (CT of the abdomen and pelvis is preferred for initial staging.)
   B. Retroperitoneal/intra-abdominal (includes GIST, desmoid, aggressive fibromatosis and other sarcomas) (CT of the abdomen and pelvis is preferred for initial staging.)
   1. Initial staging
   2. Follow up
      a. Restaging after completion of therapy to establish a new baseline
      b. Every 3-6 months for 2-3 years (for GIST tumor every 3-6 months for 3-5 years)
      c. Every 6 months for next 2 years
      d. Annually after 4-5 years

XXXI. Testicular cancer\(^{48}\) [One of the following]
   A. Pure seminoma (CT of the abdomen and pelvis is preferred for initial staging.) [One of the following]
      1. Initial staging
      2. Follow up after treatment to establish a new baseline
      3. Surveillance of Stage IA and IB tumors not treated with chemotherapy or radiation therapy [One of the following]
         a. Every 6 months for 1-2 years
         b. Every 6-12 months for year 3
         c. Annually for years 4 and 5
      4. Stage 1A and IB tumors treated with single agent
         a. Annual CT of the abdomen and pelvis for 1-3 years
      5. Stage IA, IB and I S treated with radiation
         a. Annual CT of the abdomen and pelvis for 1-3 years
      6. Stage IIA and IIB following completion of radiation therapy [One of the following]
         a. Every 6-12 months for 1-2 years
         b. Annually for year 3
      7. Stage IIB, IIC and III after chemotherapy
         a. Following completion of therapy
            i. No residual mass or mass less than or equal to 3cm with normal AFP, beta HCG and LDH may be repeated at
            ii. Residual mass > 3 cm and normal AFP, beta HCG and LDH following a PET scan 6 weeks after completion of therapy if there is activity repeat the CT of the abdomen and pelvis following either retroperitoneal lymph node dissection or second line chemotherapy or RT 3-6 months after last treatment
   B. Non seminoma (CT of the abdomen and pelvis is preferred for initial staging.) [One of the following]
1. Stage IA, IB if surveillance only
   a. Every 3-4 months for 1st year
   b. Every 4-6 months for 2nd year
   c. Every 6-12 months for 3rd and 4th year
   d. Annually for 5th year
   e. Every 1-2 years
2. Stage IB, IIA and IIB after chemotherapy
   a. Follow up after treatment to establish a new baseline
   b. Negative AFP with or without a mass
      i. Every 6 months for 1 year
      ii. Every 6-12 months for the 2nd year
      iii. Annually years 3-5
C. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Jaundice
   4. Abdominal or pelvic pain
   5. Abdominal or pelvic mass
   6. Hepatomegaly
   7. Ascites
   8. Bowel obstruction by KUB
   9. Rising AFP
   10. Rising beta HCG
   11. Rising LDH
   12. New onset of hydronephrosis
   13. New onset of renal insufficiency [One of the following]
      a. BUN > 20mg/dL
      b. Creatinine > 1.5mg/dL

XXXII. Anal cancer
   A. Initial staging
   B. After completion of treatment
   C. Surveillance after first post treatment scan
      1. Annual CT scan of the abdomen and pelvis for three years if stable
      2. Annually for abdominoperineal resection
   D. Clinical suspicion of recurrence
      1. Findings on physical examination suggestive of recurrence
      2. Anorexia
      3. Weight loss
      4. Alkaline phosphatase > 140 U/L
      5. Rising bilirubin (total bilirubin > 1.9mg/dL)
      6. Abdominal or pelvic pain
      7. Abdominal or pelvic mass
      8. Hepatomegaly
      9. Ascites
      10. Bowel obstruction by KUB
      11. New onset of renal insufficiency [One of the following]
XXXIII. Bladder cancer\textsuperscript{19,23,35}
A. Initial staging if muscle invasion on biopsy
B. Following completion of treatment and bladder in place
   1. Every 3-6 months for 2 years
C. Following completion of treatment including cystectomy
   1. Every 3-12 months for 2 years
D. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Jaundice
   4. Abdominal or pelvic pain
   5. Abdominal or pelvic mass
   6. Hepatomegaly
   7. Ascites
   8. Hematuria
   9. Bowel obstruction by KUB
10. Rectal bleeding
11. Vaginal bleeding
12. Hematuria
13. New onset of renal insufficiency [One of the following]
   a. New onset of BUN > 20mg/dL
   b. New onset of creatinine > 1.5mg/dL
14. New onset of hydronephrosis

XXXIV. New bone lesion suspicious for a metastatic lesion with no known cancer\textsuperscript{52}
[Both]
A. X-ray demonstrating a bone lesion suspicious for a metastatic lesion
B. 40 years of age or older

XXXV. Endometrial cancer\textsuperscript{22,51}
A. Incomplete surgical staging
B. Follow up as clinically indicated

XXXVI. Uterine leiomyosarcoma\textsuperscript{22,51}
A. Known or suspected extrauterine disease
B. Follow up as clinically indicated

XXXVII. Evaluation of fetal anomalies when ultrasound is not sufficient to determine treatment\textsuperscript{95-97}
60. Hahn WY, Israel GM, Lee VS, MRI of female urethral and periurethral disorders, 2004; 182:677-682.


I. Peripheral arterial vascular disease with abnormal ankle brachial index as defined in A and one additional of the following\(^1\)-\(^3\)

Note: For evaluation of PVD, if meets criteria for MRA abdomen, MRA lower extremity (one only) should be certified. An MRA of the pelvis or another lower extremity should NOT be certified.

A. ABI (ankle brachial index, ankle systolic BP divided by brachial systolic BP)
   1. Rest ABI < 0.90 in symptomatic member
   2. Exercise ABI < 0.90 in symptomatic member with rest ABI > 0.90
   3. Toe brachial index < 0.90 or pulse volume recording evidence of peripheral vascular disease if the ABI > 1.30

B. Abnormal pulses

C. Bruit

D. Claudication

E. Diabetic with [One of the following]
   1. Skin changes
   2. Loss of hair
   3. Poor capillary refill
   4. Thickened nails
   5. Thin skin

F. Arteritis or vasculitis (Takayasu's arteritis, Giant cell arteritis) [One of the following]
   1. ESR >20mm/hr
   2. Positive ANA
   3. Positive RF or rheumatoid factor

G. Scleroderma

H. Hypercoagulable state [One of the following]
   a. Antiphospholipid antibodies
   b. Behcet's syndrome
   c. Protein C deficiency
   d. Protein S deficiency
   e. Factor V Leiden deficiency
   f. Lupus anticoagulant
   g. Hyperactive platelet syndrome
   h. MRHFR
   i. Anti-cardiolipin antibodies
   j. Elevated homocysteine level
   k. Anti B2 glycoprotein antibodies
   l. Elevated fibrinogen
   m. PTT abnormal
   n. Antithrombin III antibodies
   o. Oral contraceptive use
   p. Hormone replacement
I. Sick cell anemia

Buerger's disease (thromboangiitis Obliterans) [both]
1. History of smoking
2. Loss of pulses or decreased pulses in the lower extremity

J. Known atherosclerotic occlusive disease when catheter angiography fails to demonstrate an occult runoff vessel suitable for vascular bypass

II. Aneurysm of aorta or iliac arteries\textsuperscript{4-11} [CTA is preferred unless there is a documented contraindication] [One of the following]

A. Suspected rupture of AAA [Both]
   1. New onset of mid-abdominal or back pain
   2. Clinical findings [One of the following]
      a. Pulsatile or expansile mass
      b. Abnormal x-ray suggesting aortic aneurysm
      c. Falling blood pressure

B. Known AAA [one of the following]
   1. Periodic follow-up of an asymptomatic known AAA will be according to the following schedule if there is an inadequate ultrasound and there has not been a surgical repair [One of the following]
      a. 2.5 - 2.9 cm every 5 years
      b. 3.0 - 3.0 cm every 3 years
      c. 3.5 - 3.9 cm every 2 years
      d. 4.0 - 4.9 cm every year
      e. 4.5 - 4.9 cm every 6 months
      f. 5.0 - 5.5 cm every 3-6 months
   2. New onset of pain

C. Postoperative evaluation following repair including endovascular repair (stent graft) [One of the following]
   1. 1 month after repair
   2. 3 months after repair
   3. 6 months after repair
   4. Annually after repair
   5. Suspicion of endoleak

D. Aneurysm of any intraabdominal or peripheral artery detected on other imaging

E. Vascular insufficiency of the bowel [both]
   1. Abdominal pain often starting as periumbilical and often out of proportion to findings on exam
   2. Other clinical findings [One of the following]
      a. WBC > 11,500/cu.mm
      b. Stool positive for occult blood
      c. Nausea, vomiting or diarrhea
      d. History of abdominal angina (pain after eating for approximately 3 hours)

F. Planning for endovascular repair

G. Screening for abdominal aortic aneurysm [ultrasound screening is the appropriate study. CTA should only be used if the aorta cannot be visualized adequately on US and this must be documented with the US report] [One of the following]
1. Pulsatile mass with non diagnostic ultrasound
2. History of first degree relative with an abdominal aortic aneurysm and non interpretable ultrasound
3. Male age 65-75 with a smoking history of at least 100 cigarettes in his lifetime
H. Pulsatile mass on abdominal, vaginal or rectal examination

III. **Suspected pelvic AVM\(^1,13\) [One of the following]
   A. Pulsatile pelvic mass
   B. Incidental finding on prior imaging including ultrasound
   C. Pelvic pain

IV. **Pelvic trauma, with suspected vascular injury**

V. **Prior to and after uterine artery embolization (MRA of the abdomen or pelvis)\(^1\)**

VI. **Suspected dissection of the thoracic aorta\(^1,13-15\) [One of the following]
   A. Unequal blood pressure in the arms
   B. Rapid onset of "ripping, tearing, searing, or sharp" severe chest or upper back or abdominal pain
   C. Syncope and chest pain
   D. Shortness of breath
   E. CVA or stroke
   F. Loss of pulses
   G. Aortic insufficiency murmur
   H. Marfan's syndrome
   I. Known aortic valve disease
   J. Follow up of known dissection
      1. 1 month after repair
      2. 3 months after repair
      3. 6 months after repair
      4. 12 months after repair
      5. Annually after 12 months
   K. New symptoms after repair [One of the following]
      1. Unequal blood pressure in the arms
      2. Rapid onset of "ripping, tearing, searing, or sharp" severe chest or upper back or abdominal pain
      3. Syncope and chest pain
      4. Shortness of breath
      5. CVA or stroke
      6. Loss of pulses
      7. Aortic insufficiency murmur

VII. **Intestinal angina or chronic mesenteric ischemia\(^1,16-22\)**
   A. Recurrent acute episodes of abdominal pain [One of the following]
      1. Postprandial epigastric pain, occasionally radiates to the back
      2. Weight loss
3. Fear of eating
4. Diarrhea which may be bloody

VIII. **Acute mesenteric ischemia**[^21][^22] [One of the following]
A. Acute mesenteric ischemia is being considered (life-threatening condition)
B. Isolated right-sided colon involvement suggesting SMA occlusion

IX. **Evaluation of pelvic veins**[^1] [One of the following]
A. Suspicion of iliac vein thrombus
   1. Indeterminate duplex venous ultrasound which includes evaluation of phasic respiratory signals and swelling of the entire leg
B. Suspicion of inferior vena cava thrombus
   1. Bilateral leg swelling
C. May-Thurner Syndrome
   1. Swelling and pain of the left leg not explained by venous ultrasound including Duplex venous ultrasound

X. **Evaluation of a renal transplant for suspected renal artery stenosis with Doppler ultrasound demonstrating flow in both the renal artery and renal vein**[^1] [One of the following]
A. New onset of hypertension
B. Rising renal function tests

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72198 MRA or MRV of the Pelvis
Clinical Advisory reviewed/revised: 7/27/12, 7/21/12, 8/21/11, 11/17/10, 5/26/10, 12/09, 1/21/09
Medical Advisory Committee reviewed and approved: 9/19/12, 6/27/12, 9/21/11

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MRA or MRV of the Pelvis without or with Gadolinium

Medicare

I. Peripheral arterial vascular disease [One of the following]¹⁻³
   Note: For evaluation of PVD, if meets criteria for MRA abdomen, MRA lower extremity (one only) should be certified. An MRA of the pelvis or another lower extremity should NOT be certified
   A. ABI (ankle brachial index, ankle systolic BP divided by brachial systolic BP) [One of the following]
      1. Rest ABI < .90 in symptomatic member
      2. Exercise ABI < .90 in symptomatic member with rest ABI >.90
      3. Toe brachial index <.90 or pulse volume recording evidence of peripheral vascular disease if the ABI >1.30
   B. Abnormal pulses
   C. Bruit
   D. Claudication
   E. Diabetic with
      1. Skin changes
      2. Loss of hair
      3. Poor capillary refill
      4. Thickened nails
      5. Thin skin
   F. Known atherosclerotic occlusive disease when catheter angiography has failed to demonstrate a viable runoff vessel for use in surgical bypass

II. Aneurysm of aortic, iliac or femoral arteries¹⁻⁴⁻⁹
   A. Known aortic aneurysm
      1. Periodic follow-up of known AAA will be allowed once every six months
         a. Inadequate ultrasound
         b. No surgical repair
         c. New onset of pain
   B. Known iliac or femoral artery aneurysm
      1. No surgical repair
      2. Asymptomatic may be certified every six months
   C. Suspected iliac or femoral artery aneurysm
      1. Known AAA by US or other imaging
      2. Known popliteal artery aneurysm
      3. Known femoral artery aneurysm
      4. Pulsatile abdominal mass
   D. Pulsatile mass on abdominal, vaginal, or rectal exam
   E. Aneurysm detected on x-ray or US exam
   F. Suspected rupture of AAA
1. New onset of pain
2. Clinical findings
   a. Palpable mass
   b. Abnormal x-ray of US findings suggesting aortic disease
   c. Falling blood pressure
G. Postoperative evaluation following repair including endovascular repair (stent graft)
   1. 1 month after repair
   2. 3 months after repair
   3. 6 months after repair
   4. Annually after repair

III. Suspected pelvic AVM
A. Hematuria
B. Vaginal bleeding, may be after C-section or curettage

IV. Pelvic trauma, with suspected vascular injury

V. Suspected dissection of the thoracic aorta\textsuperscript{10-15} [One of the following]
A. Unequal blood pressure in the arms
B. Rapid onset of "ripping, tearing, searing, or sharp" severe chest or upper back or abdominal pain
C. Syncope and chest pain
D. Shortness of breath
E. CVA or stroke
F. Loss of pulses
G. Aortic insufficiency murmur
H. Marfan's syndrome
I. Known aortic valve disease
J. Follow up of known dissection [One of the following]
   1. 1 month after repair
   2. 3 months after repair
   3. 6 months after repair
   4. 12 months after repair
   5. Annually after 12 months
K. New symptoms after repair [One of the following]
   1. Unequal blood pressure in the arms
   2. Rapid onset of "ripping, tearing, searing, or sharp" severe chest or upper back or abdominal pain
   3. Syncope and chest pain
   4. Shortness of breath
   5. CVA or stroke
   6. Loss of pulses
   7. Aortic insufficiency murmur

VI. Intestinal angina or chronic mesenteric ischemia\textsuperscript{16-33}
A. Recurrent acute episodes of abdominal pain
1. Dull or crampy abdominal pain
2. Postprandial epigastric pain, occasionally radiates to the back
3. Weight loss
4. Fear of eating
5. Diarrhea which may be bloody

VII. Ischemic colitis

A. Acute mesenteric ischemia is being considered (life-threatening condition)
B. Isolated right-sided colon involvement suggesting SMA occlusion

VIII. Evaluation of venous thrombosis

A. Suspicion of iliac venous thrombosis with negative Duplex Doppler study

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72198 MRA or MRV of the Pelvis: Medicare

Clinical criteria reviewed/revised: 5/10/12, 9/18/11, 11/17/10, 1/21/10, 12/8/09.

Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11

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I. Suspected nonunion of known fracture with pain at fracture site [One of the following]
   A. Failure to demonstrate progressive evidence of healing for 3 or more months
   B. Movement at fracture site by subjective sensation or by radiographic imaging

II. Suspected or known bone tumor\(^1\)-\(^4\) [One of the following] (MRI is preferred unless contraindicated)
   A. Suspected bone tumor [One of the following]
      1. Pain despite negative x-ray
      2. X-ray suspicious for malignancy
   B. Follow-up osteosarcoma of the upper extremity [One of the following]
      1. Every 3 months for 2 years
      2. Every 4 months for the third year
      3. Every 6 months for year 4 and 5
      4. Annually after year 5
   C. Follow up of Ewing’s sarcoma of the upper extremity [One of the following]
      1. Every 2 months for 2 years
      2. Every 4 months for the third year
      3. Every 6 months for years 4 and 5
      4. Annually after year 5
   D. Follow up of Chondrosarcoma of the upper extremity
      1. (Low grade and intracompartmental) [One of the following]
         a. Every 6-12 months for 2 years
         b. Annually after 2 years
      2. High grade (grade II, grade III or clear cell or extracompartmental)
         a. Imaging as clinically indicated
   E. New or worsening symptoms with known bone tumor of the upper extremity [One of the following]
      1. Increasing or worsening pain
      2. New changes on recent x-ray
      3. Known malignancy and new onset of bone pain with non diagnostic bone scan and x-ray
   F. Known primary malignancy other than bone [One of the following]
      1. Bone pain \textbf{with known malignancy and non diagnostic bone scan}
      2. Elevated alkaline phosphatase (>140 IU/L) \textbf{with known malignancy and non diagnostic bone scan}
      3. Known bone metastases with pathologic fracture
      4. Positive bone scan with no pain
   G. Osteoid osteoma [One of the following]
1. Clinical [One of the following]
   a. Bone pain worse at night which is relieved by aspirin
   b. Pain increases with activity

2. Known diagnosis and planning for surgery

3. Known diagnosis and planning for radiofrequency ablation

4. Known diagnosis and post intervention evaluation to establish a new baseline

III. **Soft tissue mass including soft tissue sarcoma**

5-9, MRI is strongly preferred and should be done unless there is an absolute contraindication [One of the following]

A. Palpable soft tissue mass not explained by the plain film
B. Calcifications on plain film which are not definitely benign
C. Follow up of spontaneous bleed into the soft tissues
D. Increasing size of known soft tissue mass
E. Recent trauma, suspected hematoma negative US
F. Suspected ganglion (most common in hand and wrist when they occur in the upper extremity)
   which fails to respond to aspiration or recurs after aspiration or is solid on transillumination or ultrasound
G. Suspected lipoma must have non diagnostic CT
H. Soft tissue sarcoma of the extremity [One of the following]
   1. Initial staging
   2. Follow up after surgery to establish a new baseline
   3. Post operative imaging after primary therapy for any stage tumor
   4. Surveillance for local recurrence in an asymptomatic individual [One of the following]
      a. 3-6 months for 5 years
      b. Annually years 5-10
   5. Suspicion of local recurrence [One of the following]
      a. New or recurrent symptoms
      b. New or recurrent mass
      c. New changes on x-ray or other imaging

IV. **Joint prosthesis**

10
A. Loosening of prosthesis on x-ray with negative aspiration for infection
B. Pain after joint replacement with negative x-ray
C. Pre-operative planning for joint replacement

V. **Complex fracture, CT required for treatment planning** [One of the following]

A. Comminuted, intra-articular distal radius fracture on x-ray
B. Fracture of the navicular or scaphoid on MRI or x-ray
C. Surgical planning of complex intra-articular fractures

VI. **Suspected navicular or scaphoid fracture**

11 MRI is strongly preferred and should be done unless there is an absolute contraindication [Both]

A. Tenderness or pain in ‘anatomic snuff box’ (at distal end of radius along lateral margin of the wrist) and tenderness with thumb movement
B. X-rays negative for fracture 10-14 days after injury and treated with a caste
VII. Suspected fracture hook of the hamate
   A. Negative x-rays

VIII. Suspected intra-articular loose body and recent x-ray MRI is strongly preferred and should be done unless there is an absolute contraindication
   [One of the following]
   A. Joint pain
   B. Locking
   C. Clicking

IX. Distal radioulnar joint subluxation
   A. Non diagnostic x-ray

X. Soft tissue abscess with negative ultrasound and tender or warm or erythematous area
   [One of the following]
   A. Aural temperature > 38.3°C or >100.9°F
   B. Leukocytosis, WBC > 11,500/cu.mm
   C. ESR > 20mm/hr
   D. CRP > 10 mg/L

References:

Additional references for Medicare:

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73200, 73201, 73202 CT of the Upper Extremity

Clinical criteria reviewed/revised: 5/21/12, 9/2/11, 11/17/10, 9/15/10, 1/20/10

Medical Advisory Committee reviewed and approved: 6/27/12, 9/21/11
I. Suspected occlusion, stenosis\textsuperscript{1} [One of the following]
   A. Abnormal pulses: asymmetric, weak or absent
   B. Skin changes: poor capillary filling, cyanosis
   C. Abnormal Doppler ultrasound
   D. Reconstruction surgery planning
   E. Thoracic outlet syndrome [One of the following]
      1. Cold extremity or digits
      2. Pallor
      3. Decreased pulses
      4. Decreased blood pressure in one arm
      5. Change in pulse or blood pressure with change in position of arm or head (positive Adson’s maneuver or Allen test)
   F. Effort thrombosis [One of the following]
      1. Swelling
      2. Cyanosis
      3. Evidence of collateral veins
   G. Arteritis (Takayasu’s arteritis, Giant cell arteritis) [One of the following]
      1. ESR > 20mm/hr
      2. Positive ANA
      3. Positive RF or rheumatoid factor
   H. Scleroderma
   I. Hypercoagulable state [One of the following]
      1. Personal history of cancer
      2. Factor V Leiden mutation
      3. MTHFR
      4. SLE
      5. Sickle cell disease
      6. Contraceptive medications
      7. Protein C deficiency
      8. Protein S deficiency
      9. Antiphospholipid antibodies
      10. Elevated lipoprotein (a)
      11. Elevated platelet count
      12. Prothrombin 20210 gene mutation
      13. Antithrombin III deficiency
   J. Buerger’s disease (thromboangiitis Obliterans) [both]
      1. History of smoking
      2. Loss of pulses or decreased pulses in the upper extremity

II. Aneurysm
   A. Pulsatile mass by palpation or imaging
III. Venous aneurysm with negative ultrasound  
A. Asymptomatic peripheral mass

IV. Arteriovenous malformation or venous malformation\(^2\) [One of the following]  
A. Hypertrophy of soft tissues of the extremity
B. Limb length discrepancy
C. History of Klippel-Trenaunay syndrome of variant
D. History of Osler Weber Rendu syndrome
E. History of Parkes-Weber syndrome
F. Hemorrhage into a limb
G. Thrill or bruit
H. Port-wine stain
I. Dilated veins

V. Upper extremity venous thrombosis\(^3\)  
A. Duplex venous ultrasound including compression is equivocal

References:


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73206 CTA Upper Extremity

Clinical criteria reviewed/revised: 5/4/12, 9/3/11, 11/17/10, 9/16/09
Medical Advisory Committee reviewed and approved: 6/27/12, 9/21/11
I. Suspected fracture with negative x-ray (including occult fracture or insufficiency fracture)\(^1-2\) [One of the following]
   A. Suspicion of fracture of distal radius
      1. Casting and negative x-ray 10-14 days after injury (There may be a negative x-ray at the time of injury.)
   B. Suspected occult fracture of the navicular or scaphoid with a negative initial x-ray and pain or tenderness over the anatomic “snuff box” and no improvement after 10-14 days of casting
   C. Occult fracture of the wrist other than scaphoid
   D. Comminuted, intra-articular fracture of the distal radius on x-ray for surgical planning
   E. Olecranon fracture
   F. All other suspected, occult or insufficiency fractures of the upper extremity including the humerus, ulna, radius, carpal bones, metacarpals and phalanges with negative x-rays
      1. Pain and negative or non diagnostic x-ray 10-14 days after the injury or onset of pain (The need for a repeat x-ray is waived if the first film is taken 10-14 days after the injury or onset of pain.)
   G. Child abuse

II. Suspected soft tissue injury\(^1-8\) [One of the following]
   A. Gamekeeper injury or skier’s thumb (metacarpophalangeal ulnar collateral ligament injury)
      1. Negative or non diagnostic x-ray including abduction stress views of the thumb
   B. Biceps tear near the shoulder with failed conservative management as described in 2 below as well as appropriate history and/or clinical findings and/or symptoms
      1. Symptoms [One of the following]
         a. Sudden sharp pain in the upper arm
         b. Pop or snap can be heard
         c. Cramping of upper arm over the biceps with use of the arm
         d. Bruising of the upper arm
         e. Pain or tenderness
         f. Weakness of the shoulder or elbow on examination
         g. Difficulty with pronation and/or supination
         h. Bulge in the upper arm
         i. Defect over the muscle
      2. Conservative management to include ice, rest, NSAIDS or anti-inflammatory medication for at least 4 weeks
   C. Biceps tear above the elbow with negative x-ray (can be partial or complete but usually complete) [One of the following]
      1. Swelling in the front of the elbow
      2. Bruising near the elbow and in the forearm
      3. Weakness of the biceps muscle on examination
      4. Bulge in the upper arm
5. Defect in the muscle near the elbow
D. Collateral ligament tear with negative x-rays
   1. Ulna collateral ligament (medial) at the elbow [History and symptoms] with pain medially
      [One of the following]
      a. History [One of the following]
         i. Participation in throwing sports such as baseball, javelin, tennis, ice hockey, racquet ball
         ii. History of elbow dislocation
         iii. Fall on an outstretched arm
      b. Symptoms [One of the following]
         i. Tenderness over the medial aspect of the elbow
         ii. Loss of range of motion
         iii. Bruising
         iv. Pain reproduced with a clenched fist
   2. Radial collateral ligament injury at the elbow (lateral) with pain laterally
      [One of the following]
      a. Tenderness over the lateral aspect of the elbow
      b. Varus instability
      c. Positive chair rise test
      d. Positive pivot shift test
   3. Olecranon bursitis swelling of the posterior elbow with or without pain and no improvement after least 4 weeks of anti-inflammatory medication, ice
E. Flexor tendon injuries [One of the following]
   1. Inability to flex fingers or thumb
   2. Numbness of the fingertip
   3. History of rheumatoid arthritis
   4. History of deep cut of fingers, wrist or forearm
   5. Sports injury "jersey finger"

III. Tendinitis, tendinopathy or tendinosis\textsuperscript{9,10} [One of the following]
A. Lateral epicondylitis or tennis elbow with negative x-ray, pain along the lateral elbow with increases with activity and decreases with rest and no improvement after at least 4 weeks of anti-inflammatory medication or steroid injections, bracing and physical therapy
   1. Medial epicondylitis or golfer’s elbow with pain on the medial side of the elbow and either decreased grip strength or pain with resisted flexion of the wrist, a negative x-ray and no improvement after at least 4 weeks of anti-inflammatory medication, activity modification or rest, ice, and physical therapy
B. Bicipital or biceps tendonitis and no improvement after steroid injections or anti-inflammatory medication and physical therapy for at least 4 weeks
   1. Symptoms [One of the following]
      a. Anterior shoulder pain
      b. Pain with overhead lifting or overhead activity
C. Triceps tendinosis or tendinopathy with tenderness over the triceps tendon, a negative x-ray and no improvement after steroid injections or anti-inflammatory medication and physical therapy for at least 4 weeks
IV. Ulnar nerve entrapment with medial elbow pain [One of the following]
   A. Distal paresthesias of the forearm and 4th and 5th fingers
   B. History of throwing sports or racquet ball, tennis, weight lifting or skiing
   C. Positive Tinel’s sign over the medial epicondyle
   D. Atrophy of the hypothenar eminence
   E. Index finger pinch weakness

V. Evaluation of the intrinsic muscles of the hand [One of the following]
   A. Atrophy of any hand muscles
   B. Motor and sensory deficits of the hand unexplained by physical examination and EMG

VI. Arteriovenous malformation or venous malformation [One of the following]
   A. Hypertrophy of soft tissues of the extremity
   B. Limb length discrepancy
   C. History of Klippel-Trenaunay syndrome of variant
   D. History of Osler-Weber-Rendu syndrome
   E. History of Parkes-Weber syndrome
   F. Hemorrhage into a limb
   G. Thrill or bruit
   H. Port-wine stain
   I. Dilated veins

VII. Suspected or known avascular necrosis (osteonecrosis, OCD, AVN, osteochondritis dissecans Kienbock’s disease) (Risk factor and one other of the following]
   A. Risk factors and pain [One of the following]
      1. Steroid use
      2. Sickle cell disease
      3. Excessive alcohol use
      4. HIV infection
      5. SLE
      6. Renal transplant
      7. Trauma [One of the following]
         a. Fracture
         b. Dislocation
      8. Coagulopathy
      9. Bisphosphonates
     10. Smoking
   B. Shoulder with a negative x-ray and pain
   C. Elbow with a negative x-ray and pain
      1. Physical findings [One of the following]
         a. Catching
         b. Locking
         c. Clicking
         d. Grinding
         e. Crepitus
f. Stiffness
g. Tenderness

D. Wrist and hand with a negative x-ray and pain [One of the following]
   1. Catching
   2. Locking
   3. Clicking
   4. Grinding
   5. Crepitus
   6. Stiffness
   7. Tenderness
   8. Flexion contractures

VIII. Known or suspected bone tumor\textsuperscript{15-18} [One of the following]

A. Suspected bone tumor [One of the following]
   1. Pain despite negative x-ray
   2. X-ray suspicious for malignancy

B. Follow-up osteosarcoma of the upper extremity [One of the following]
   1. Every 3 months for 2 years
   2. Every 4 months for the third year
   3. Every 6 months for year 4 and 5
   4. Annually after year 5

C. Follow up of Ewing’s sarcoma of the upper extremity [One of the following]
   1. Every 2 months for 2 years
   2. Every 4 months for the third year
   3. Every 6 months for years 4 and 5
   4. Annually after year 5

D. Follow up of chondrosarcoma of the upper extremity
   1. Low grade and intracompartmental [One of the following]
      a. Every 6-12 months for 2 years
      b. Annually after 2 years
   2. High grade (grade II, grade III or clear cell or extracompartmental)
      a. Imaging as clinically indicated

E. New or worsening symptoms with known bone tumor of the upper extremity [One of the following]
   1. Increasing or worsening pain
   2. New changes on recent x-ray
   3. Known malignancy and new onset of bone pain with non diagnostic bone scan and x-ray

F. Known primary malignancy other than bone [One of the following]
   1. Bone pain with known malignancy and non diagnostic bone scan
   2. Elevated alkaline phosphatase (>140 IU/L) with known malignancy and non diagnostic bone scan
   3. Known bone metastases with pathologic fracture
   4. Known malignancy with back pain and collapsed vertebra
   5. Positive bone scan with no pain

G. Osteoid osteoma – CT is the study of choice [One of the following]
   1. Clinical [One of the following]
      a. Bone pain worse at night which is relieved by aspirin
IX. **Soft tissue mass including soft tissue sarcoma (MRI without and with contrast is strongly preferred except for the evaluation of a ganglion.) [One of the following]^{19-22}

A. Palpable soft tissue mass not thought to be a lipoma
B. Calcifications on plain film which are not definitely benign
C. Follow up of spontaneous bleed into the soft tissues
D. Increasing size of known soft tissue mass
E. Recent trauma, suspected hematoma negative US
F. Suspected ganglion (most common in hand and wrist when they occur in the upper extremity) which fails to respond to aspiration or recurs after aspiration or is solid on transillumination or ultrasound
G. Suspected lipoma must have non diagnostic CT
H. Soft tissue sarcoma of the extremity [One of the following]
   1. Initial staging
   2. Follow up after surgery to establish a new baseline
   3. Post operative imaging after primary therapy for any stage tumor
   4. Surveillance for local recurrence in an asymptomatic individual [One of the following]
      a. 3-6 months for 5 years
      b. Annually years 5-10
   5. Suspicion of local recurrence [One of the following]
      a. New or recurrent symptoms
      b. New or recurrent mass
      c. New changes on x-ray or other imaging

X. **Brachial plexus injury or plexopathy**

See MRI of the Upper Extremity Other Than Joint Without and With Contrast, CPT code 73220.

XI. **Child abuse**

XII. **Soft tissue abscess with negative ultrasound and tender or warm or erythematous area [One of the following]**

A. Aural temperature >38.3°C or > 100.9°F
B. Leukocytosis, WBC > 11,500/cu.mm
C. ESR> 20mm/hr
D. CRP >10 mg/L
References:


73218 MRI Upper Extremity Other than Joint

Clinical criteria reviewed/revised: 7/17/12, 5/4/12, 9/5/11, 11/17/10, 9/15/10, 7/21/10, 12/09, 1/20/10

Medical Advisory Committee reviewed and approved: 9/19/12, 6/27/12, 9/21/11
I. **Suspected or known osteomyelitis with bone pain**1-5 [One of the following]
   A. Clinical and laboratory findings [One of the following]
      1. ESR >20 mm/hr
      2. Aural Temperature >38.3°C or 100.9°F
      3. Leukocytosis, WBC >11,500/cu.mm
      4. C-reactive protein >10 mg/L
      5. Blood culture positive
      6. X-ray suggestive of osteomyelitis
   B. History of diabetes, dialysis or peripheral vascular disease
   C. History of penetrating injury or surgery near the involved bone
   D. Sinus tract, poor wound or fracture healing
   E. Preoperative evaluation of osteomyelitis
   F. Positive probe to bone test
   G. Post-treatment evaluation

II. **Known or suspected bone tumor**6-10 [One of the following]
   A. Suspected bone tumor [One of the following]
      1. Pain despite negative x-ray
      2. Radiography suspicious for malignancy
   B. Follow-up osteosarcoma of the lower extremity [One of the following]
      1. Follow up after treatment to establish a new baseline
      2. Every 3 months for 2 years
      3. Every 4 months for the third year
      4. Every 6 months for years 4 and 5
      5. Annually after year 5
   C. Follow-up of Ewing's sarcoma [One of the following]
      1. Follow up after treatment to establish a new baseline
      2. Every 2 months for 2 years
      3. Every 4 months for the third year
      4. Every 6 months for years 4 and 5
      5. Annually after year 5
   D. Follow-up of chondrosarcoma [One of the following]
      1. Low grade and intracompartmental
         a. Follow up after treatment to establish a new baseline
         b. Every 6-12 months for 2 years
         c. Annually after 2 years
      2. High grade (grade II, grade III or clear cell or extracompartmental)
a. Follow up after treatment to establish a new baseline
b. MRI as clinically indicated

E. New or worsening symptoms with known bone tumor of the upper extremity [One of the following]
   1. Increasing or worsening pain
   2. New changes on recent x-ray
   3. Known malignancy and new onset of bone pain with non diagnostic bone scan and x-ray

F. Known primary malignancy other than bone (MRI without contrast is preferred.) [One of the following]
   1. Bone pain with known malignancy and non diagnostic bone scan
   2. Elevated alkaline phosphatase (>140 IU/L) with known malignancy and non diagnostic bone scan
   3. Known bone metastases with pathologic fracture
   4. Known malignancy with back pain and collapsed vertebra
   5. Positive bone scan with no pain

G. Osteoid osteoma – CT is the study of choice [One of the following]
   1. Clinical [One of the following]
      a. Bone pain worse at night which is relieved by aspirin
      b. Pain increases with activity
   2. Known diagnosis and planning for surgery
   3. Known diagnosis and planning for radiofrequency ablation
   4. Known diagnosis and post intervention evaluation to establish a new baseline

III. Soft tissue mass including soft tissue sarcoma (MRI without and with contrast is strongly preferred except for the evaluation of a ganglion.) [One of the following]10-14
    A. Palpable soft tissue mass not thought to be a lipoma
    B. Calcifications on plain film which are not definitely benign
    C. Follow-up of spontaneous bleed into the soft tissues
    D. Increasing size of known soft tissue mass
    E. Recent trauma, suspected hematoma negative US
    F. Suspected ganglion (most common in hand and wrist when they occur in the upper extremity) which fails to respond to aspiration or recurs after aspiration or is solid on transillumination or ultrasound
    G. Suspected lipoma must have non diagnostic CT
    H. Soft tissue sarcoma of the extremity [One of the following]
       1. Initial staging
       2. Follow-up after surgery to establish a new baseline
       3. Postoperative imaging after primary therapy for any stage tumor
       4. Surveillance for local recurrence in an asymptomatic individual [One of the following]
          a. 3-6 months for 5 years
          b. Annually years 5-10
       5. Suspicion of local recurrence [One of the following]
          a. New or recurrent symptoms
          b. New or recurrent mass
    I. New changes on x-ray or other imaging
IV. **Brachial plexus**\(^{15}\) [One of the following]

A. **Brachial plexus injury** [Both]
   1. **Symptoms** [One of the following]
      a. Weakness or paralysis of the upper extremity
      b. Sensory loss or numbness of the upper extremity
      c. Horner’s syndrome
      d. Shoulder and/or arm pain
      e. Burning or electric sensation in more than one nerve distribution
      f. Loss of deep tendon reflexes in the upper extremity
      g. EMG showing a neurogenic lesion in muscles supplied by at least 2 cervical levels
   2. **History** [One of the following]
      a. Trauma including birth trauma
      b. Radiation fibrosis
      c. History of radiation therapy to the chest, breast or axilla

B. **Primary or metastatic tumor** [both]
   1. **Symptoms** [One of the following]
      a. Weakness or paralysis of the upper extremity
      b. Sensory loss or numbness of the upper extremity
      c. Horner’s syndrome
      d. Shoulder and/or arm pain
      e. Burning or electric sensation in more than one nerve distribution
      f. Loss of deep tendon reflexes in the upper extremity
      g. EMG showing a neurogenic lesion in muscles supplied by at least 2 cervical levels
   2. **History** [One of the following]
      a. Known primary tumor
      b. Lung cancer especially a Pancoast tumor
      c. Lymphoma

C. **Schwannoma or neurofibroma**
   1. **Symptoms** [One of the following]
      a. Palpable mass in the lower neck or supraclavicular fossa
      b. Weakness or paralysis of the upper extremity
      c. Sensory loss or numbness in the upper extremity
      d. Horner’s syndrome
      e. Shoulder and/or arm pain
      f. Burning or electric sensation in more than one nerve distribution
      g. Loss of deep tendon reflexes in the upper extremity
      h. EMG showing a neurogenic lesion in muscles supplied by at least 2 cervical levels

D. **Entrapment** [One of the following]
   1. **Symptoms**
      a. Pain and paresthesia along the ulna aspect of the forearm, hand, and 4th and 5th fingers

E. **Symptoms increase with overhead activities**

V. **Arteriovenous malformation or venous malformation**\(^{16-19}\) [One of the following]

A. Hypertrophy of soft tissues of the extremity

B. Limb length discrepancy
C. History of Klippel-Trenaunay syndrome of variant
D. History of Osler-Weber-Rendu syndrome
E. History of Parkes Weber syndrome
F. Hemorrhage into a limb
G. Pulsating soft tissue mass [One of the following]
   1. Thrill
   2. Bruit
H. Port-wine stain
I. Dilated veins

VI. Soft tissue abscess with negative ultrasound and tender or warm or erythematous area [One of the following]
A. Aural temperature >38.3°C or >100.9°F
B. Leukocytosis, WBC> 11,500/cu mm
C. ESR> 20mm/hr
D. CRP >10 mg/L

References:
I. **Chronic joint pain with negative x-ray**
   A. No relief after conservative medical management [One of the following]
      1. Continued pain after treatment with anti-inflammatory medication and physical therapy for at least 4 weeks
      2. Symptoms worsening while under treatment

II. **Suspected intra-articular loose body with recent x-ray** [One of the following]
   A. Joint pain
   B. Locking
   C. Clicking

III. **Suspected avascular necrosis (osteonecrosis, OCD, AVN, osteochondritis dissecans)** and pain, recent x-ray and restricted extension [risk factor and physical finding]
   A. Risk factors and pain [One of the following]
      1. Steroid use
      2. Sickle Cell Disease
      3. Excessive alcohol use
      4. HIV infection
      5. SLE
      6. Renal Transplant
      7. Trauma with fracture or dislocation Coagulopathy
      8. Bisphosphonate use
      9. Smoking
   B. Physical findings [One of the following]
      1. Catching
      2. Locking
      3. Clicking
      4. Grinding
      5. Crepitus
      6. Stiffness
      7. Tenderness over the capitulum
      8. Flexion contractures

IV. **Suspected fracture with negative x-ray** [One of the following]
   A. Negative x-ray 10-14 days after the onset of pain (if this is the only x-ray then the need for the initial x-ray is waived)
   B. Child abuse
   C. Bone scan positive but not specific for fracture
   D. Osteoporosis on bone density or long term steroid use
V. **Injuries to the elbow**[^1][^6][^9]

A. **Ulna collateral ligament (medial) at the elbow** [history and symptoms] with pain medially and negative x-rays

   1. **History [One of the following]**
      - Participation in throwing sports such as baseball, javelin, tennis, ice hockey, racquet ball
      - History of elbow dislocation
      - Fall on an outstretched arm
   2. **Symptoms [One of the following]**
      - Tenderness over the medial aspect of the elbow
      - Loss of range of motion
      - Bruising
      - Pain reproduced with a clenched fist

B. **Radial collateral ligament injury at the elbow (lateral) with pain laterally** [One of the following]

   1. Tenderness over the lateral aspect of the elbow
   2. Varus instability
   3. Positive chair rise test
   4. Positive pivot shift test

C. **Ulnar nerve injury or entrapment with medial elbow pain** [One of the following]

   - Distal paresthesias of the forearm and 4th and 5th fingers
   - History of throwing sports or racquet ball, tennis, weight lifting or skiing
   - Positive Tinel's sign over the medial epicondyle
   - Atrophy of the hypothenar eminence
   - Index finger pinch weakness

D. **Biceps or triceps tendon tear with a negative x-ray**

   1. Swelling in the front of the elbow
   2. Bruising near the elbow and in the forearm
   3. Weakness of the biceps muscle on examination
   4. Bulge in the upper arm
   5. Defect in the muscle near the elbow

VI. **Soft tissue mass including soft tissue sarcoma (MRI without and with contrast is strongly preferred except for the evaluation of a ganglion)** [One of the following][^10][^14]

A. Palpable soft tissue mass not thought to be a lipoma
B. Calcifications on plain film which are not definitely benign
C. Follow up of spontaneous bleed into the soft tissues
D. Increasing size of known soft tissue mass
E. Recent trauma, suspected hematoma negative US
F. Suspected ganglion (most common in hand and wrist when they occur in the upper extremity) which fails to respond to aspiration or recurs after aspiration or is solid on transillumination or ultrasound
G. Suspected lipoma must have non diagnostic CT
H. **Soft tissue sarcoma of the extremity** [One of the following]

   1. Initial staging
   2. Follow up after surgery to establish a new baseline

[^1]: Reference 1
[^6]: Reference 6
[^9]: Reference 9
[^10]: Reference 10
[^14]: Reference 14
3. Post operative imaging after primary therapy for any stage tumor
4. Surveillance for local recurrence in an asymptomatic individual [One of the following]
   a. 3-6 months for 5 years
   b. Annually years 5-10
5. Suspicion of local recurrence [One of the following]
   a. New or recurrent symptoms
   b. New or recurrent mass
   c. New changes on x-ray or other imaging

VII. Tendinitis, tendinopathy or tendinosis\textsuperscript{1,15,16} [One of the following]
   A. Lateral epicondylitis or tennis elbow and no improvement with at least 6 months of anti-inflammatory medications (or steroid injections), bracing and physical therapy or complaints worsening during conservative management [One of the following]
      1. Pain along the lateral elbow which increases with activity and decreases with rest
      2. Pain increases with grasping and/or twisting
   B. Medial epicondylitis or golfer’s elbow with pain on the medial side of the elbow no improvement after at least 3 months of physical therapy, rest, ice, activity modification and anti-inflammatory medication or symptoms worsening while under treatment [failed conservative therapy and one other]
      1. Pain with resisted flexion of the wrist
      2. Decreased grip strength
   C. Triceps tendinosis of tendinitis or tendinopathy and no improvement after conservative therapy with at least 4 weeks of anti-inflammatory medication, ice and rest or symptoms worsening under treatment
      1. Point tenderness over the triceps tendon (posteriorly)

VIII. Ulnar nerve entrapment with medial elbow pain\textsuperscript{15} [One of the following or more]
   A. Distal paresthesias of the forearm and 4th and 5th fingers
   B. History of throwing sports or racquet ball, tennis, weight lifting or skiing
   C. Positive Tinel’s sign over the medial epicondyle
   D. Atrophy of the hypothenar eminence
   E. Index finger pinch weakness

IX. Soft tissue abscess with negative ultrasound and tender or warm or erythematous area See MRI without and with contrast CPT code 73223

X. Child abuse
References:


73221 MRI Upper Extremity Joint: Elbow
Clinical criteria reviewed/revised: 7/18/12, 5/17/12, 9/8/11, 11/17/10, 12/09, 1/21/09
Medical Advisory Committee reviewed and approved: 9/19/12, 6/27/12, 9/21/11
I. Joint pain with negative x-ray\textsuperscript{1,2}
   A. No relief after conservative medical management [One of the following]
      1. Continued pain after treatment with anti-inflammatory medication and physical therapy for at least 4 weeks
      2. Symptoms worsening while under treatment

II. Suspected intra-articular loose body and recent x-ray [One of the following]\textsuperscript{1}
   A. Joint pain
   B. Locking
   C. Clicking

III. Suspected or known avascular necrosis (osteonecrosis, OCD, AVN, osteochondritis dissecans) with pain and recent x-ray of the shoulder [Risk factor and physical finding]
   A. Risk factors and pain [One of the following]
      1. Steroid use
      2. Sickle cell disease
      3. Excessive alcohol use
      4. HIV infection
      5. SLE
      6. Renal transplant
      7. Trauma with fracture or dislocation
      8. Coagulopathy
      9. Bisphosphonate use
     10. Smoking
   B. Physical findings [One of the following]
      1. Catching
      2. Locking
      3. Clicking
      4. Grinding
      5. Crepitus
      6. Stiffness
      7. Tenderness over the shoulder
      8. Flexion contractures

IV. Suspected fracture with negative x-ray\textsuperscript{3,4} [One of the following]
   A. Negative x-ray 10-14 days after the onset of pain (If this is the only x-ray then the need for an initial x-ray is waived.)
   B. Child abuse
   C. Bone scan positive but not specific for fracture
   D. Osteoporosis on bone density or long term steroid use
V. Suspected acute cuff tear with or without acromial spurs on x-ray (if performed) and no improvement after conservative medical management consisting of treatment with anti-inflammatory medication and physical therapy for at least 4 weeks or symptoms worsening during trial of conservative management [(A and B) or C]5

A. Symptoms [One of the following]
   1. Pain especially with overhead activities such as reaching or combing hair
   2. Pain increases when sleeping of the affected side
   3. Inability to use the arm or lift the arm

B. Findings on examination [One of the following]
   1. Weakness on examination
   2. Subacromial tenderness
   3. Positive Apley’s scratch test
   4. Positive Neer sign
   5. Positive apprehension test
   6. Positive drop arm test
   7. Positive empty can sign
   8. Positive relocation sign
   9. Positive sulcus sign

C. Recurrent pain and finding(s) in B above following surgery

VI. Suspected chronic rotator cuff tendinitis2 with or without acromial spurs (if performed) and no improvement after conservative medical management consisting of treatment with anti-inflammatory medication and physical therapy for at least 4 weeks or symptoms or findings worsening during trial of conservative management [(A and B)]

A. Symptoms [One of the following]
   1. Dull aching in the shoulder, which may interfere with sleep
   2. Severe pain when the arm is actively abducted into an overhead position such as throwing, reaching or combing hair

B. Findings on examination [One of the following]
   1. Tenderness
   2. Positive Neer test

VII. Suspected labral tear or SLAP lesion or Bankart lesion [One of the following] (MR arthrogram MRI with contrast is preferred.)1,6-8

A. Pain interferes with the smooth functioning of the shoulder
B. Discomfort on forced external rotation at 90 degrees of abduction
C. A “pop” or “click” on forced external rotation
D. Discomfort on forced horizontal adduction of the shoulder
E. Weakness in the rotator cuff muscles on examination
F. Decreased range of motion
G. Pain with overhead activity
VIII. **Bicipital tendonitis (biceps tendonitis)**\(^9,10\) no improvement after conservative medical management consisting of treatment with anti-inflammatory medication and physical therapy for at least 4 weeks or symptoms or findings worsening during trial of conservative management [Symptoms and findings on exam]

A. Symptoms [One of the following]
   1. Anterior shoulder pain
   2. Pain with overhead lifting or overhead activity

B. Findings on exam [One of the following]
   1. Tenderness over the bicipital groove on examination
   2. Positive Yergason's test
   3. Positive Speed's test
   4. Pain increases with flexion of the shoulder against resistance

IX. **Muscle tear** [One of the following]

A. Symptoms
   1. Pain and swelling over the muscle
   2. Bruising over the muscle
   3. Bulge
   4. Defect in the muscle

X. **Biceps tendon tear**\(^9-11\) with no improvement after at least 4 weeks of conservative medical management consisting of ice, anti-inflammatory medication, rest and physical therapy or worsening of symptoms during trial of conservative management

A. Symptoms [One of the following]
   1. Sudden sharp pain in the upper arm
   2. Pop or snap can be heard
   3. Cramping of upper arm over the biceps with use of the arm
   4. Bruising of the upper arm
   5. Pain or tenderness
   6. Weakness of the shoulder or elbow on examination
   7. Difficulty with pronation and/or supination
   8. Bulge in the upper arm
   9. Defect over the muscle

XI. **Rotator cuff impingement syndrome**\(^1,12\) or shoulder bursitis with x-ray showing either acromial spur, calcification of the coracoacromial ligament or acromioclavicular arthritis and no improvement after at least 4 weeks of ice, rest, physical therapy and anti-inflammatory medication or steroid injections or symptoms worsening while on conservative management [One of the following]

A. Symptoms
   1. Shoulder pain increased by overhead movements
2. Pain interfering with sleep when lying on the affected side

XII. **Soft tissue mass including soft tissue sarcoma with negative x-ray (MRI without and with contrast is strongly preferred.)** [One of the following]^{13-17}

XIII. **Soft tissue mass including soft tissue sarcoma (MRI without and with contrast is strongly preferred except for the evaluation of a ganglion.)** [One of the following]^{13-17}
   A. Palpable soft tissue mass not thought to be a lipoma
   B. Calcifications on plain film which are not definitely benign
   C. Follow up of spontaneous bleed into the soft tissues
   D. Increasing size of known soft tissue mass
   E. Recent trauma, suspected hematoma negative US
   F. Suspected ganglion (most common in hand and wrist when they occur in the upper extremity) which fails to respond to aspiration or recurs after aspiration or is solid on transillumination or ultrasound
   G. Suspected lipoma must have non diagnostic CT
   H. **Soft tissue sarcoma of the extremity** [One of the following]
      1. Initial staging
      2. Follow up after surgery to establish a new baseline
      3. Post operative imaging after primary therapy for any stage tumor
      4. Surveillance for local recurrence in an asymptomatic individual [One of the following]
         a. 3-6 months for 5 years
         b. Annually years 5-10
      5. Suspicion of local recurrence [One of the following]
         a. New or recurrent symptoms
         b. New or recurrent mass
         c. New changes on x-ray or other imaging

XIV. **Child abuse**

XV. **Soft tissue abscess with negative ultrasound and tender or warm or erythematous area –** See MRI without and with contrast CPT code 73223.
References:

I.  **Joint pain etiology unknown with a negative x-ray**\(^1,2\)
   A.  No response to conservative medical management
       1.  Continued pain after treatment with anti-inflammatory medication and physical therapy for at least 4 weeks
       2.  Symptoms worsening while under treatment

II.  **Suspected intra-articular loose body [One of the following]**
   A.  Joint pain
   B.  Locking
   C.  Clicking

III.  **Suspected or known avascular necrosis with wrist or hand pain [(osteonecrosis, OCD, AVN, osteochondritis dissecans, including Kienbock’s disease)]\(^1,3\) [Risk factor and physical finding]**
   A.  Risk factors and pain [One of the following]
       1.  Steroid use
       2.  Sickle cell disease
       3.  Excessive alcohol use
       4.  HIV infection
       5.  SLE
       6.  Renal transplant
       7.  Trauma with fracture or dislocation
       8.  Coagulopathy
       9.  Bisphosphonate use
       10.  Smoking
   B.  Physical findings [One of the following]
       1.  Catching
       2.  Locking
       3.  Clicking
       4.  Grinding
       5.  Crepitus
       6.  Stiffness
       7.  Tenderness
       8.  Flexion contractures

IV.  **Suspected injury of wrist ligaments and cartilage including the triangular fibrocartilage complex (TFCC)\(^3-8\) wrist pain after conservative medical management consisting of treatment with anti-inflammatory medication and physical therapy and immobilization for at least 4 weeks or findings worsening while in treatment**
A. Physical findings [One of the following]
   1. Clicking
   2. Swelling
   3. Bruising
   4. Decreased grip strength
   5. Pain with movement
   6. Pain or tenderness on palpation

V. Suspected fracture with negative x-ray\(^{3,8,10}\) [One of the following]
   A. Suspicion of fracture of distal radius
      1. Casting and negative x-ray 10-14 days after injury (There may be a negative x-ray at the time of injury.)
   B. Suspected occult fracture of the navicular or scaphoid with a negative initial x-ray and pain or tenderness over the anatomic “snuff box” and no improvement after 10-14 days of casting
   C. Occult fracture of the wrist other than scaphoid with negative x-ray
   D. Comminuted, intra-articular fracture of the distal radius on x-ray for surgical planning
   E. All other suspected, occult or insufficiency fractures of the hand and wrist (including the distal ulna, and radius, carpals, metacarpals and phalanges) with negative x-rays 10-14 days after the initial x-ray (The need for a repeat x-ray is waived if the first film is taken 10-14 days after the injury or onset of pain.)
   F. Child abuse

VI. Evaluation of intrinsic muscles of the hand\(^{11}\) [One of the following]
   A. Atrophy of any hand muscles
   B. Motor and sensory deficits of the hand unexplained by PE and EMG

VII. Gamekeeper injury (thumb metacarpal phalangeal collateral ligament injury)\(^4\)
    with negative or non diagnostic x-rays including abduction stress views of the thumb

VIII. Soft tissue mass including soft tissue sarcoma (MRI without and with contrast is strongly preferred except for the evaluation of a ganglion.) [One of the following]\(^{12-16}\)
   A. Palpable soft tissue mass not thought to be a lipoma
   B. Calcifications on plain film which are not definitely benign
   C. Follow-up of spontaneous bleed into the soft tissues
   D. Increasing size of known soft tissue mass
   E. Recent trauma, suspected hematoma negative US
   F. Suspected ganglion (most common in hand and wrist when they occur in the upper extremity) which fails to respond to aspiration or recurs after aspiration or is solid on transillumination or ultrasound
   G. Suspected lipoma must have non diagnostic CT
   H. Soft tissue sarcoma of the extremity [One of the following]
      1. Initial staging
      2. Follow-up after surgery to establish a new baseline
      3. Post-operative imaging after primary therapy for any stage tumor
4. Surveillance for local recurrence in an asymptomatic individual [One of the following]
   a. 3-6 months for 5 years
   b. Annually years 5-10
5. Suspicion of local recurrence [One of the following]
   a. New or recurrent symptoms
   b. New or recurrent mass
6. New changes on x-ray or other imaging

IX. Child abuse

X. Soft tissue abscess with negative ultrasound and tender or warm or erythematous area – See MRI without and with contrast (CPT code 73223).

References:

I. Suspected or known osteomyelitis with bone pain\(^1-8\) [One of the following]
   A. Clinical and laboratory findings [One of the following]
      1. Aural temperature > 38.3°C or > 100.9°F
      2. Leukocytosis, WBC > 11,500/cu.mm
      3. Blood culture positive
      4. X-ray suggestive of osteomyelitis
      5. ESR > 22mm/hr
      6. C-reactive protein > 10 mg/L
   B. History of diabetes, dialysis or peripheral vascular disease
   C. History of penetrating injury or surgery near the involved bone
   D. Sinus tract, poor wound or fracture healing
   E. Preoperative evaluation of osteomyelitis
   F. Positive probe to bone test
   G. Post treatment evaluation

II. Arthritis and synovitis with either inadequate response to current treatment or to monitor response to treatment with known rheumatoid of psoriatic arthritis or ankylosing spondylitis\(^9-12\)

III. Known or suspected bone tumor\(^13-16\) [One of the following]
   A. Suspected bone tumor [One of the following]
      1. Pain despite negative x-ray
      2. X-ray suspicious for malignancy
   B. Follow-up osteosarcoma of the upper extremity [One of the following]
      1. Follow up after treatment to establish a new baseline
      2. Every 3 months for 2 years
      3. Every 4 months for the third year
      4. Every 6 months for year 4 and 5
      5. Annually after year 5
   C. Follow up of Ewing's sarcoma of the upper extremity [One of the following]
      1. Follow up after treatment to establish a new baseline
      2. Every 2 months for 2 years
      3. Every 4 months for the third year
      4. Every 6 months for years 4 and 5
      5. Annually after year 5
   D. Follow up of Chondrosarcoma of the upper extremity [One of the following]
      1. Low grade and intracompartmental [One of the following]
         a. Follow up after treatment to establish a new baseline
         b. Every 6-12 months for 2 years
         c. Annually after 2 years
2. High grade (grade II, grade III or clear cell or extracompartmental)
   a. Follow up after treatment to establish a new baseline
   b. Imaging as clinically indicated

E. New or worsening symptoms with known bone tumor of the upper extremity [One of the following]
   1. Increasing or worsening pain
   2. New changes on recent x-ray
   3. Known malignancy and new onset of bone pain with non diagnostic bone scan and x-ray

F. Known primary malignancy other than bone [One of the following]
   1. Bone pain with known malignancy and non diagnostic bone scan
   2. Elevated alkaline phosphatase (>140 IU/L) with known malignancy and non diagnostic bone scan
   3. Known bone metastases with pathologic fracture
   4. Known malignancy with back pain and collapsed vertebra
   5. Positive bone scan with no pain

G. Osteoid osteoma – CT is the study of choice
   1. Clinical [One of the following]
      a. Bone pain worse at night which is relieved by aspirin
      b. Pain increases with activity
   2. Known diagnosis and planning for surgery
   3. Known diagnosis and planning for radiofrequency ablation
   4. Known diagnosis and post intervention evaluation to establish a new baseline

IV. MR arthrogram³ (with gadolinium)
   A. Pain interferes with the smooth functioning of the elbow

V. Soft tissue mass including soft tissue sarcoma (MRI without and with contrast is strongly preferred except for the evaluation of a ganglion) [One of the following]¹⁷-²¹
   A. Palpable soft tissue mass not thought to be a lipoma
   B. Calcifications on plain film which are not definitely benign
   C. Follow up of spontaneous bleed into the soft tissues
   D. Increasing size of known soft tissue mass
   E. Recent trauma, suspected hematoma negative US
   F. Suspected ganglion (most common in hand and wrist when they occur in the upper extremity) which fails to respond to aspiration or recurs after aspiration or is solid on transillumination or ultrasound
   G. Suspected lipoma must have non diagnostic CT
   H. Soft tissue sarcoma of the extremity [One of the following]
      1. Initial staging
      2. Follow up after surgery to establish a new baseline
      3. Post operative imaging after primary therapy for any stage tumor
      4. Surveillance for local recurrence in an asymptomatic individual [One of the following]
         a. 3-6 months for 5 years
         b. Annually years 5-10
      5. Suspicion of local recurrence [One of the following]
VI. **Septic joint with arthrocentesis contraindicated or not diagnostic (MRI without and with contrast is preferred) [All] (Ultrasound or x-ray guided Arthrocentesis is the procedure of choice)**

   **A. Symptoms [One of the following]**
   1. Decreased range of motion
   2. Acute development of a hot swollen joint (< 2 weeks)

   **B. Laboratory tests [One of the following]**
   1. Aural temperature >38.3°C or >100.9°F
   2. Leukocytosis, WBC > 11,500/cu mm
   3. ESR > 20 mm/hr
   4. CRP > 10 mg/L

VII. **Soft tissue abscess with negative ultrasound and tender or warm or erythematous area [One of the following]**

   **A. Aural temperature >38.3°C or >100.9°F**
   **B. Leukocytosis, WBC > 11,500/cu mm**
   **C. ESR > 20 mm/hr**
   **D. CRP > 10 mg/L**
References:


73222, 73223 MRI Upper Extremity Joint: Elbow

Clinical criteria reviewed/revised: 7/18/12, 7/1/12: 9/9/11, 11/17/10, 11/18/09
Medical Advisory Committee reviewed and approved: 9/19/12, 6/27/12, 9/21/11
I. **Suspected or known osteomyelitis with bone pain**\(^1-6\) [One of the following]
   A. Clinical and laboratory findings [One of the following]
      1. Aural temperature > 38.3°C or 100.9°F
      2. Leukocytosis, WBC >11,500/cu.mm
      3. Blood culture positive
      4. X-ray suggestive of osteomyelitis
      5. ESR > 22mm/hr
      6. C-reactive protein > 10 mg/L
   B. History of diabetes, dialysis or peripheral vascular disease
   C. History of penetrating injury or surgery near the involved bone
   D. Sinus tract, poor wound or fracture healing
   E. Preoperative evaluation of known osteomyelitis
   F. Positive probe to bone test
   G. Post treatment evaluation

II. **Suspected labral tear or SLAP lesion or Bankart lesion** [One of the following](MR arthrogram MRI with contrast is preferred)\(^7-10\)
   A. Pain interferes with the smooth functioning of the shoulder
   B. Discomfort on forced external rotation at 90 degrees of abduction
   C. A "pop" or "click" on forced external rotation
   D. Discomfort on forced horizontal adduction of the shoulder
   E. Weakness in the rotator cuff muscles on examination
   F. Decreased range of motion
   G. Pain with overhead activity

III. **Arthritis and synovitis with either inadequate response to current treatment or to monitor response to treatment with known rheumatoid of psoriatic arthritis or ankylosing spondylitis**\(^11\)

IV. **Known or suspected bone tumor**\(^15-18\) [One of the following]
   A. Suspected bone tumor [One of the following]
      1. Pain despite negative x-ray
      2. X-ray suspicious for malignancy
   B. Follow-up osteosarcoma of the upper extremity [One of the following]
      1. Follow up after treatment to establish a new baseline
      2. Every 3 months for 2 years
      3. Every 4 months for the third year
      4. Every 6 months for year 4 and 5
5. Annually after year 5

C. Follow up of Ewing’s sarcoma of the upper extremity [One of the following]
   1. Follow up after treatment to establish a new baseline
   2. Every 2 months for 2 years
   3. Every 4 months for the third year
   4. Every 6 months for years 4 and 5
   5. Annually after year 5

D. Follow up of Chondrosarcoma of the upper extremity
   1. (Low grade and intracompartmental) [One of the following]
      a. Every 6-12 months for 2 years
      b. Annually after 2 years
   2. High grade (grade II, grade III or clear cell or extracompartmental)
      a. Imaging as clinically indicated

E. New or worsening symptoms with known bone tumor of the upper extremity [One of the following]
   1. Increasing or worsening pain
   2. New changes on recent x-ray
   3. Known malignancy and new onset of bone pain with non diagnostic bone scan and x-ray

F. Known primary malignancy other than bone (MRI without contrast is preferred) [One of the following]
   1. Bone pain with known malignancy and non diagnostic bone scan
   2. Elevated alkaline phosphatase (>140 IU/L) with known malignancy and non diagnostic bone scan
   3. Known bone metastases with pathologic fracture
   4. Known malignancy with back pain and collapsed vertebra
   5. Positive bone scan with no pain

G. Osteoid osteoma – CT is the study of choice
   1. Clinical [One of the following]
      a. Bone pain worse at night which is relieved by aspirin
      b. Pain increases with activity
   2. Known diagnosis and planning for surgery
   3. Known diagnosis and planning for radiofrequency ablation
   4. Known diagnosis and post intervention evaluation to establish a new baseline

V. **Brachial plexus**[One of the following]
   A. Brachial plexus injury [Both]
      1. Symptoms [One of the following]
         a. Weakness or paralysis of the upper extremity
         b. Sensory loss or numbness of the upper extremity
         c. Horner’s syndrome
         d. Shoulder and/or arm pain
         e. Burning or electric sensation in more than one nerve distribution
         f. Loss of deep tendon reflexes in the upper extremity
         g. EMG showing a neurogenic lesion in muscles supplied by at least 2 cervical levels
      2. History [One of the following]
         a. Trauma including birth trauma
         b. Radiation fibrosis
c. History of radiation therapy to the chest, breast, or axilla

B. Primary or metastatic tumor [both]
   1. Symptoms [One of the following]
      a. Weakness or paralysis of the upper extremity
      b. Sensory loss or numbness of the upper extremity
      c. Horner’s syndrome
      d. Shoulder and/or arm pain
      e. Burning or electric sensation in more than one nerve distribution
      f. Loss of deep tendon reflexes in the upper extremity
      g. EMG showing a neurogenic lesion in muscles supplied by at least 2 cervical levels
   2. History [One of the following]
      a. Known primary tumor
      b. Lung cancer especially a Pancoast tumor
      c. Lymphoma

C. Schwannoma or neurofibroma
   1. Symptoms [One of the following]
      a. Palpable mass in the lower neck or supraclavicular fossa
      b. Weakness or paralysis of the upper extremity
      c. Sensory loss or numbness in the upper extremity
      d. Horner’s syndrome
      e. Shoulder and/or arm pain
      f. Burning or electric sensation in more than one nerve distribution
      g. Loss of deep tendon reflexes in the upper extremity
      h. EMG showing a neurogenic lesion in muscles supplied by at least 2 cervical levels

D. Entrapment [One of the following]
   1. Symptoms
      a. Pain and paresthesia along the ulna aspect of the forearm, hand and 4th and 5th fingers
      b. Symptoms increase with overhead activities

VI. MR arthrogram (with gadolinium) for suspected labral tear or SLAP lesion or Bankart lesion [One of the following]
   A. Pain interferes with the smooth functioning of the shoulder
   B. Discomfort on forced external rotation at 90 degrees of abduction
   C. A “pop” or “click” on forced external rotation
   D. Discomfort on forced horizontal adduction of the shoulder
   E. Weakness in the rotator cuff muscles on examination
   F. Decreased range of motion
   G. Pain with overhead activity

VII. Soft tissue mass including soft tissue sarcoma (MRI without and with contrast is strongly preferred except for the evaluation of a ganglion) [One of the following]
   A. Palpable soft tissue mass not thought to be a lipoma
   B. Calcifications on plain film which are not definitely benign
   C. Follow up of spontaneous bleed into the soft tissues
D. Increasing size of known soft tissue mass
E. Recent trauma, suspected hematoma negative US
F. Suspected ganglion (most common in hand and wrist when they occur in the upper extremity) which fails to respond to aspiration or recurs after aspiration or is solid on transillumination or ultrasound
G. Suspected lipoma must have non diagnostic CT
H. Soft tissue sarcoma of the extremity [One of the following]
   1. Initial staging
   2. Follow up after surgery to establish a new baseline
   3. Post operative imaging after primary therapy for any stage tumor
   4. Surveillance for local recurrence in an asymptomatic individual [One of the following]
      a. 3-6 months for 5 years
      b. Annually years 5-10
   5. Suspicion of local recurrence [One of the following]
      a. New or recurrent symptoms
      b. New or recurrent mass
      c. New changes on x-ray or other imaging

VIII. Septic joint with arthrocentesis contraindicated or not diagnostic [All] (Ultrasound or x-ray guided Arthrocentesis is the procedure of choice)\(^7,25\)
A. Symptoms [One of the following]
   1. Decreased range of motion
   2. Acute development of a hot swollen joint (< 2 weeks)
B. Laboratory tests [One of the following]
   1. Aural temperature >38.3°C or >100.9°F
   2. Leukocytosis, WBC > 11,500/cu mm
   3. ESR > 20mm/hr
   4. CRP > 10 mg/L

IX. Soft tissue abscess with negative ultrasound and tender or warm or erythematous area [One of the following]
A. Aural temperature >38.3°C or >100.9°F
B. Leukocytosis, WBC > 11,500/cu mm
C. ESR > 20mm/hr
D. CRP > 10 mg/L
References:


73222, 73223 MRI Upper Extremity Joint: Shoulder

Clinical criteria reviewed/revised: 7/18/12, 7/5/12, 9/8/11, 11/17/10, 12/09, 1/21/09
Medical Advisory Committee reviewed and approved: 9/19/12, 6/27/12, 9/21/11
I. Suspected or known osteomyelitis with bone pain\textsuperscript{1-8} [One of the following]
   A. Clinical and laboratory findings [One of the following]
      1. Aural temperature $> 38.3^\circ C$ or $100.9^\circ F$
      2. Leukocytosis, WBC $> 11,500$/cu.mm
      3. Blood culture positive
      4. X-ray suggestive of osteomyelitis
      5. ESR $> 22$mm/hr
      6. C-reactive protein $> 10$ mg/L
   B. History of diabetes, dialysis or peripheral vascular disease
   C. History of penetrating injury or surgery near the involved bone
   D. Sinus tract, poor wound or fracture healing
   E. Preoperative evaluation of osteomyelitis
   F. Positive probe to bone test
   G. Post treatment evaluation

II. Arthritis and synovitis with either inadequate response to current treatment or to monitor response to treatment with known rheumatoid of psoriatic arthritis or ankylosing spondylitis\textsuperscript{9-12}

III. Known or suspected bone tumor\textsuperscript{13-16} [One of the following]
   A. Suspected bone tumor [One of the following]
      1. Pain despite negative x-ray
      2. X-ray suspicious for malignancy
   B. Follow-up osteosarcoma of the upper extremity [One of the following]
      1. Follow up after completion of treatment to establish new baseline
      2. Every 3 months for 2 years
      3. Every 4 months for the third year
      4. Every 6 months for years 4 and 5
      5. Annually after year 5
   C. Follow up of Ewing’s sarcoma of the upper extremity [One of the following]
      1. Follow up after completion of treatment to establish new baseline
      2. Every 2 months for 2 years
      3. Every 4 months for the third year
      4. Every 6 months for years 4 and 5
      5. Annually after year 5
   D. Follow up of Chondrosarcoma of the upper extremity [One of the following]
      1. (Low grade and intracompartmental) [One of the following]
         a. Follow up after completion of treatment to establish new baseline
b. Every 6-12 months for 2 years
c. Annually after 2 years

2. High grade (grade II, grade III or clear cell or extracompartmental)
   a. Follow up after completion of treatment to establish new baseline
   b. Imaging as clinically indicated

E. New or worsening symptoms with known bone tumor of the upper extremity [One of the following]
   1. Increasing or worsening pain
   2. New changes on recent x-ray
   3. Known malignancy and new onset of bone pain with non diagnostic bone scan and x-ray

F. Known primary malignancy other than bone [One of the following]
   1. Bone pain with known malignancy and non diagnostic bone scan
   2. Elevated alkaline phosphatase (>140 IU/L) with known malignancy and non diagnostic bone scan
   3. Known bone metastases with pathologic fracture
   4. Known malignancy with back pain and collapsed vertebra
   5. Positive bone scan with no pain

G. Osteoid osteoma – CT is the study of choice
   1. Clinical [One of the following]
      a. Bone pain worse at night which is relieved by aspirin
      b. Pain increases with activity
   2. Known diagnosis and planning for surgery
   3. Known diagnosis and planning for radiofrequency ablation
   4. Known diagnosis and post intervention evaluation to establish a new baseline

IV. MR arthrogram with a history of injury and pain in the wrist and a recent x-ray that does not explain the symptoms\textsuperscript{17-19} (with gadolinium) [One of the following]
   A. Suspected or known TFCC ligament injury with either catching and/or clicking and/or pain with supination or ulnar deviation and/or positive ulnar carpal sag test
   B. Suspicion of scapholunate ligament disruption
   C. Suspicion of lunotriquetral ligament disruption

V. Soft tissue mass including soft tissue sarcoma\textsuperscript{20-23}
   A. Palpable soft tissue mass not thought to be a lipoma
   B. Calcifications on plain film which are not definitely benign
   C. Follow up of spontaneous bleed into the soft tissues
   D. Increasing size of known soft tissue mass
   E. Recent trauma, suspected hematoma negative US
   F. Suspected ganglion (most common in hand and wrist when they occur in the upper extremity) which fails to respond to aspiration or recurs after aspiration or is solid on transillumination or ultrasound
   G. Suspected lipoma must have non diagnostic CT
   H. Soft tissue sarcoma of the extremity [One of the following]
      1. Initial staging
      2. Follow up after surgery to establish a new baseline
3. Post operative imaging after primary therapy for any stage tumor
4. Surveillance for local recurrence in an asymptomatic individual [One of the following]
   a. 3-6 months for 5 years
   b. Annually years 5-10
5. Suspicion of local recurrence [One of the following]
   a. New or recurrent symptoms
   b. New or recurrent mass
   c. New changes on x-ray or other imaging

VI. Septic joint [All] (Ultrasound or x-ray guided Arthrocentesis is the procedure of choice)²⁴
   A. Arthrocentesis contra-indicated or not diagnostic
   B. Symptoms [One of the following]
      1. Decreased range of motion
      2. Acute development of a hot swollen joint (< 2 weeks)
   C. Laboratory tests [One of the following]
      1. Aural temperature > 38.3°C or 100.9°F
      2. Leukocytosis, WBC > 11,500/cu.mm
      3. ESR> 20mm/hr
      4. CRP > 10mg/L

VII. Soft tissue abscess with negative ultrasound and tender or warm or erythematous area [One of the following]
   A. Aural temperature > 38.3°C or 100.9°F
   B. Leukocytosis, WBC > 11,500/cu.mm
   C. ESR> 20mm/hr
   D. CRP >10 mg/L
References:

I. Suspected occlusion, stenosis\textsuperscript{1} [One of the following]
   A. Abnormal pulses: asymmetric, weak or absent
   B. Skin changes: poor capillary filling, cyanosis
   C. Abnormal Doppler ultrasound
   D. Reconstruction surgery planning
   E. Thoracic outlet syndrome [One of the following]
      1. Cold extremity or digits
      2. Pallor
      3. Decreased pulses
      4. Decreased blood pressure in one arm
      5. Change in pulse or blood pressure with change in position of arm or head (positive Adson’s maneuver or Allen test)
   F. Effort thrombosis
      1. Swelling of the upper extremity, face or neck
      2. Cyanosis of the upper extremity, face or neck
      3. Evidence of collateral veins
   G. Arteritis (Takayasu’s arteritis, Giant cell arteritis) [One of the following]
      1. ESR > 20mm/hr
      2. Positive ANA
      3. Positive RF or rheumatoid factor
   H. Scleroderma
   I. Hypercoagulable state [One of the following]
      1. Antiphospholipid antibodies
      2. Behcet’s syndrome
      3. Protein C deficiency
      4. Protein S deficiency
      5. Factor V Leiden deficiency
      6. Lupus anticoagulant
      7. Hyperactive platelet syndrome
      8. MRHFR
      9. Anti-cardiolipin antibodies
      10. Elevated homocysteine level
      11. Anti B2 glycoprotein antibodies
      12. Elevated fibrinogen
      13. PTT abnormal
      14. Antithrombin III antibodies
      15. Oral contraceptive use
      16. Hormone replacement
      17. Sickle cell anemia
   J. Buerger’s disease (thromboangiitis Obliterans) [both]
      1. History of smoking
      2. Loss of pulses or decreased pulses in the upper extremity
II. Aneurysm
   A. Pulsatile mass by palpation or imaging

III. Venous aneurysm with negative ultrasound
   A. Asymptomatic peripheral mass

IV. Arteriovenous Malformation or Venous Malformation [One of the following]
   A. Hypertrophy of soft tissues of the extremity
   B. Limb length discrepancy
   C. History of Klippel-Trenaunay syndrome of variant
   D. History of Osler Weber Rendu syndrome
   E. History of Parkes-Weber syndrome
   F. Hemorrhage into a limb
   G. Pulsating soft tissue mass [One of the following]
      1. Thrill
      2. Bruit
   H. Port-wine stain
   I. Dilated veins

V. Upper extremity venous thrombosis
   A. Duplex venous ultrasound including compression is equivocal

References:
This procedure is not a covered benefit for Medicare Beneficiaries in the above mentioned states.

References:

1. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L32611), Novitas Solutions, Inc, Arkansas, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=3&CntrctrType=1%7c9&KeyWord=73225&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=73225&kq=true&bc=IAAAAAAANAAA.

2. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA (L32611), Novitas Solutions, Inc., Colorado (effective 11/19/2012), accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=8&CntrctrType=1%7c9&KeyWord=73225&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=73225&kq=true&bc=IAAAAAAANAAA.


4. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L31399), Novitas Solutions, Inc, District of Columbia, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=10&CntrctrType=1%7c9&KeyWord=73225&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=73225&kq=true&bc=IAAAAAAANAAA.

5. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L31399), Novitas Solutions, Inc, Delaware, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=11&CntrctrType=1%7c9&KeyWord=73225&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=73225&kq=true&bc=IAAAAAAANAAA.

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7. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L25367), National Government Services, Inc., Indiana, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=20&CntrctrType=1%7c9&KeyWord=73225&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=73225&kq=true&bc=IAAAAAAANAAA.

8. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L32611), Novitas Solutions Inc., Louisiana, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=23&CntrctrType=1%7c9&KeyWord=73225&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=73225&kq=true&bc=IAAAAAAANAAA.

9. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L30237), NHIC, Corp, Massachusetts, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=24&CntrctrType=1%7c9&KeyWord=73225&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=73225&kq=true&bc=IAAAAAAANAAA.

10. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L31399), Novitas Solutions, Inc, Maryland, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=25&CntrctrType=1%7c9&KeyWord=73225&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=73225&kq=true&bc=IAAAAAAANAAA.

11. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L30237), NHIC, Corp, Maine, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=26&CntrctrType=1%7c9&KeyWord=73225&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=73225&kq=true&bc=IAAAAAAANAAA.

13. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L30237), NHIC, Corp, New Hampshire, accesses at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=37&CntctrType=1|9&KeyWord=73225&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=73225&kq=true&bc=IAAAAAAAAC


15. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L32611), Novitas Solutions, Inc., New Mexico (effective 11/19/2012), accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=39&CntctrType=1|9&KeyWord=73225&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=73225&kq=true&bc=IAAAAAAAAC


17. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L32611), Novitas Solutions, Inc., Oklahoma (effective 11/19/2012), accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=43&CntctrType=1|9&KeyWord=73225&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=73225&kq=true&bc=IAAAAAAAAC


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73225 MRA Upper Extremity: Medicare AR, CO, CT, DC, DE, FL, IN, LA, MA, MD, ME, MS, NH, NJ, NM, NY, OK, PA, RI, TX, VT

Critical criteria reviewed/revised: 8/5/11, 11/17/10
Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
I. Suspected nonunion of known fracture\textsuperscript{1,2} [One of the following]
   A. Failure to demonstrate progressive evidence of healing for 3 or more months
   B. Pain at fracture site
   C. Movement by subjective sensation or by radiographic imaging

II. Suspected tarsal coalition with negative or non diagnostic x-ray and pain which is relieved by rest\textsuperscript{1} [One of the following]
   A. Rigid flatfoot with peroneal spasm
   B. Pain relieved by rest
   C. Peroneal tendon spasms
   D. History of ankle sprains

III. Bone tumor\textsuperscript{3-5} [One of the following] (MRI is preferred.)
   A. Suspected bone tumor [One of the following]
      1. Pain despite negative x-ray
      2. X-ray suspicious for malignancy
   B. Follow-up osteosarcoma [One of the following]
      1. Every 3 months for 2 years
      2. Every 4 months for the third year
      3. Every 6 months for years 4 and 5
      4. Annually after year 5
   C. Follow up of Ewing’s sarcoma [One of the following]
      1. Every 2 months for 2 years
      2. Every 4 months for the third year
      3. Every 6 months for years 4 and 5
      4. Annually after year 5
   D. Follow up of chondrosarcoma
      1. (Low grade and intracompartmental) [One of the following]
         a. Every 6-12 months for 2 years
         b. Annually after 2 years
      2. High grade (grade II, grade III or clear cell or extracompartmental)
         a. Imaging as clinically indicated
   E. New or worsening symptoms with known bone tumor [One of the following]
      1. Increasing or worsening pain
      2. New changes on recent x-ray
      3. Known malignancy and new onset of bone pain with non diagnostic bone scan and x-ray
   F. Known primary malignancy other than bone [One of the following]
      1. Bone pain with known malignancy and non diagnostic bone scan
2. Elevated alkaline phosphatase (>140 IU/L) with known malignancy and non diagnostic bone scan
3. Known bone metastases with pathologic fracture
4. Known malignancy with back pain and collapsed vertebra
5. Positive bone scan with no pain

G. Osteoid osteoma [One of the following]
   1. Clinical [One of the following]
      a. Bone pain worse at night which is relieved by aspirin
      b. Pain increases with activity
   2. Known diagnosis and planning for surgery
   3. Known diagnosis and planning for radiofrequency ablation
   4. Known diagnosis and post intervention evaluation to establish a new baseline
      a. New changes on recent x-ray

IV. Soft tissue mass of extremity\(^6\) (MRI without and with contrast is preferred.) [One of the following]
   A. Palpable soft tissue mass not explained by the plain film
   B. Calcifications on plain film which are not definitely benign
   C. Follow up of spontaneous bleed into the soft tissues
   D. Increasing size of known soft tissue mass
   E. Recent trauma, suspected hematoma negative US
   F. Suspected ganglion (most common in hand and wrist when they occur in the upper extremity) which fails to respond to aspiration or recurs after aspiration or is solid on transillumination or ultrasound
   G. Suspected lipoma must have non diagnostic CT
   H. Soft tissue sarcoma of the extremity [One of the following]
      1. Initial staging
      2. Follow up after surgery to establish a new baseline
      3. Postoperative imaging after primary therapy for any stage tumor
      4. Surveillance for local recurrence in an asymptomatic individual [One of the following]
         a. 3-6 months for 5 years
         b. Annually years 5-10
      5. Suspicion of local recurrence [One of the following]
         a. New or recurrent symptoms
         b. New or recurrent mass
         c. New changes on x-ray or other imaging

V. Joint prosthesis\(^7\)
   A. Loosening on x-ray with negative aspiration for infection
   B. Pain after TKR
      1. X-rays negative for loosening
      2. No evidence or suspicion of infection
   C. Preoperative planning for joint replacement
   D. Positive aspiration for infection
VI. Complex fracture, CT required for therapy planning\(^4\) including but not limited to the following:
   A. Tibial plateau fracture on x-ray [One of the following]
      1. Focal tenderness
      2. Effusion
      3. Inability to bear weight

VII. Patellofemoral syndrome (including patellar tracking disorder) with nondiagnostic x-ray and no improvement after at least 8 weeks of physical therapy\(^8,9\) [One of the following]
This is usually a clinical diagnosis that does not require imaging. X-rays may be required. CT or MRI is rarely necessary.
   A. Symptoms and history [One of the following]
      1. Anterior knee pain worsening with activity (e.g., running, standing up from a bent-knee position)
      2. Pain on squatting
      3. History of recurrent patellar dislocations or subluxations
   B. Clinical findings [One of the following]
      1. Crepitus
      2. Positive patellar grind test
      3. Pain on palpation of the medial and/or lateral patellar
      4. Positive J sign (patella displaces laterally at full knee extension)
      5. Positive patellar tilt test

VIII. Suspected avascular necrosis (OCD, osteonecrosis)\(^{10-12}\) and MRI is contraindicated and bone scan cannot be performed or is not planned (MRI is preferred.) [Risk factor and symptoms]
   A. Risk factor and pain [One of the following]
      1. Excessive alcohol use
      2. HIV infection
      3. SLE
      4. History of steroid use
      5. Sickle cell disease
      6. Renal transplant
      7. Bisphosphonate use
      8. Coagulopathy
      9. Smoking
   B. Hip with non diagnostic x-ray
      1. Pain in the groin or buttocks
      2. Pain increasing with ambulation
      3. Pain with internal rotation
      4. Limited range of motion
   C. Knee
   D. Positive x-ray with need for additional characterization of the lesion prior to intervention and non diagnostic x-ray
1. Pain and/or swelling
2. Catching or locking or giving way
E. Ankle [Both] (CT arthrogram)
   1. Non-diagnostic x-ray
   2. Pain [One of the following]
      a. Swelling
      b. Stiffness
      c. Weakness
      d. Symptoms exacerbated by prolonged standing
      e. Joint effusion
      f. Instability

IX. Knee injuries (MRI preferred; if CT is used it should be a CT arthrogram.) – For all indications MRI must be contraindicated or not feasible.12
   A. Knee pain secondary to recent injury, with nondiagnostic x-ray
      1. Swelling or effusion
      2. Pain significantly limiting mobility
   B. Suspected meniscal tear
      1. With instability
         a. Intermittent locking
         b. Unable to fully extend
         c. McMurray’s test positive
         d. Joint line tenderness
      2. Without instability
         a. Knee clinical findings
            i. Effusion after activity
            ii. Joint line tenderness
            iii. Pain with flexion and rotation
            iv. A sensation of popping, clicking, or snapping
   C. Injuries to ligaments
      1. Suspected anterior cruciate ligament injury
         a. Knee pain after twisting injury
         b. Knee buckling with quick turn or step down
         c. Positive anterior drawer sign
      2. Suspected posterior cruciate ligament injury
         a. Absent tibial step off (tibia should protrude 1 cm beyond femur at 90 degrees of flexion
         b. History of hyperextension or posterior displacement of tibia
      3. Suspected LCL or MCL injury
         a. MCL
            i. Positive valgus stress test (knee opens medially with stress to tibia)
            ii. Continued instability after conservative management with brace
         b. LCL
            i. History of an injury causing varus (lateral at the knee) stress
            ii. Tenderness at lateral joint line
            iii. Laxity to varus stress
   D. Suspected quadriceps tendon injury
1. Palpable lesion in quadriceps muscle or tendon
2. Inability to extend the knee
3. Palpable gap in tendon

E. Tendinitis or tendinosis [1 and 2]
   1. Physical findings [One of the following]
      a. Swelling
      b. Tenderness
      c. Pain on passive stretching
      d. Pain with active motion
   2. No response to conservative management [One of the following]
      a. Immobilization for 2-6 weeks
      b. Physical therapy for up to 4 weeks
      c. Anti-inflammatory medication for 4 weeks or more unless contraindicated
      d. Steroid injections or oral steroids including Medrol Dosepak

X. Suspected or known bone tumor\textsuperscript{13-15} [One of the following]
   A. Suspected bone tumor
      1. Pain despite negative x-ray
      2. X-ray suspicious for malignancy
   B. Follow-up osteosarcoma [One of the following]
      1. Every 3 months for 2 years
      2. Every 4 months for the third year
      3. Every 6 months for year 4 and 5
      4. Annually after year 5
   C. Follow up of Ewing’s sarcoma [One of the following]
      1. Every 2 months for 2 years
      2. Every 4 months for the third year
      3. Every 6 months for years 4 and 5
      4. Annually after year 5
   D. Follow up of Chondrosarcoma
      1. (Low grade and intracompartmental) [One of the following]
         a. Every 6-12 months for 2 years
         b. Annually after 2 years
      2. High grade (grade II, grade III or clear cell or extracompartmental)
         a. Imaging as clinically indicated
   E. New or worsening symptoms with known bone tumor [One of the following]
      1. Increasing or worsening pain
      2. New changes on recent x-ray
      3. Known malignancy and new onset of bone pain with non diagnostic bone scan and x-ray
   F. Known primary malignancy other than bone [One of the following]
      1. Bone pain with known malignancy and non diagnostic bone scan
      2. Elevated alkaline phosphatase (>140 IU/L) with known malignancy and non diagnostic bone scan
      3. Known bone metastases with pathologic fracture
      4. Positive bone scan with no pain
   G. Osteoid osteoma [One of the following]
      1. Clinical [One of the following]
a. Bone pain worse at night which is relieved by aspirin
b. Pain increases with activity
2. Known diagnosis and planning for surgery
3. Known diagnosis and planning for radiofrequency ablation
4. Known diagnosis and post intervention evaluation to establish a new baseline

XI. Preoperative planning of joint replacement

XII. Hip pain\textsuperscript{16}
   A. Gait abnormality
   B. Impaired range of motion
   C. Locking or snapping

XIII. Ankle impingement syndrome\textsuperscript{17} (MR arthrogram preferred; if CT is performed it should be CT arthrogram.)

XIV. Lisfranc injury or fracture and MRI cannot be done and x-rays are normal or indeterminate\textsuperscript{18} (MRI is preferred.) [One of the following]
   A. Acute injury of the foot
   B. Pain, swelling and inability to bear weight

XV. Femoroacetabular impingement syndrome or hip impingement and an x-ray\textsuperscript{19-21}
   A. Symptoms [One of the following]
      1. Pain with prolonged sitting
      2. Difficulty getting in and out of a car
      3. Pain reproduced by flexion or adduction or internal rotation of the hip when supine.
      4. Complaints of anterolateral hip pain
      5. Positive FADIR test (flexion-abduction-external rotation)
   B. Radiographic findings suggestive of impingement such as cam lesion or pincer lesion

XVI. Subtalar dislocation\textsuperscript{22}
References:


73706    CTA of the Lower Extremity

For aortobifemoral or aortobiiliac runoff study use CPT code 75635.

I. Peripheral vascular disease with abnormal ankle brachial index as defined in A and another one of the following (PVD, occlusion or stenosis of arteries or bypass grafts of the leg)1-4
   A. ABI (ankle brachial index, ankle systolic BP divided by brachial systolic BP)
      1. Rest ABI < 0.90 in symptomatic member
      2. Exercise ABI < 0.90 in symptomatic member with rest ABI > 0.90
      3. Toe brachial index < 0.90 or pulse volume recording evidence of peripheral vascular disease if the ABI > 1.30
   B. Abnormal pulses
   C. Bruit
   D. Claudication
   E. Diabetic with:
      1. Skin changes
      2. Loss of hair
      3. Poor capillary refill
      4. Thickened nails
      5. Thin skin
   F. Arteritis (Takayasu's arteritis, giant cell arteritis) [One of the following]
      1. ESR > 20mm/hr
      2. Positive ANA
      3. Positive RF or rheumatoid factor
   G. Scleroderma
   H. Hypercoagulable state [One of the following]
      1. Antiphospholipid antibodies
      2. Behcet's syndrome
      3. Protein C deficiency
      4. Protein S deficiency
      5. Factor V Leiden deficiency
      6. Lupus anticoagulant
      7. Hyperactive platelet syndrome
      8. MRHFR
      9. Anticardiolipin antibodies
      10. Elevated homocysteine level
      11. Anti B2 glycoprotein antibodies
      12. Elevated fibrinogen
      13. PTT abnormal
      14. Antithrombin III antibodies
      15. Oral contraceptive use
      16. Hormone replacement
17. Sickle cell anemia
   I. Buerger's disease (thromboangiitis obliterans) [Both]
      1. History of smoking
      2. Loss of pulses or decreased pulses in the lower extremity

II. Femoral or popliteal artery aneurysm$^1$
   A. Pulsatile mass

III. Trauma (popliteal)$^1$
   A. Diminished peripheral pulses
   B. Suspected pseudoaneurysm

IV. Fibular transfer graft$^5,6$

V. Venous aneurysm [One of the following]
   A. Doppler US not diagnostic
   B. Asymptomatic peripheral mass

VI. Arteriovenous malformation

VII. Venous malformation

VIII. Deep venous thrombosis
   A. Equivocal duplex venous ultrasound including compression

References:

I. **Suspected fracture (including stress and occult fractures) with pain and a negative of non diagnostic x-ray**¹ [One of the following]
   A. Repeat x-ray 10-14 days after onset of symptoms which is negative or non-diagnostic (The first x-ray may be waived if the only x-ray study is taken 10-14 days after the onset of symptoms.)
   B. Bone scan positive but not specific for fracture
   C. Osteoporosis on bone density or long term steroid use with sacral pain (insufficiency fracture of the sacrum) [Both]
      1. Negative x-ray
      2. Negative bone scan
   D. Stress or insufficiency fracture of the hip
      1. Normal x-ray

II. **Suspected soft tissue injury**²-⁶ with negative or non diagnostic x-rays [One of the following]
   A. Anterior cruciate ligament injury or tear [One of the following]
      1. Rapid onset of an effusion which may be bloody
      2. Instability of the knee
      3. Positive anterior drawer sign
      4. Positive Lachman’s sign
      5. Positive pivot shift test
   B. Posterior cruciate ligament injury or tear with no improvement after a trial of RICE (rest, ice, compression and elevation) along with immobilization and physical therapy for at least 4 weeks [One of the following]
      1. Absent tibial step off (tibia should protrude 1 cm beyond femur at 90 degrees of flexion) or positive posterior tibial sag sign (Godfrey test)
      2. Positive posterior drawer sign
      3. Rapid onset of swelling
      4. Positive reverse pivot shift test
   C. Quadriceps tendon tear or rupture with negative or non diagnostic x-ray [One of the following]
      1. Acute knee pain and swelling
      2. Difficulty ambulating
      3. Bruising
      4. Palpable defect in the suprapatellar area
      5. Low lying patella
      6. Limited extension
   D. Hamstring muscle injury
      1. Symptoms [a+ (b or c or d)]
         a. Sudden pain in the back of the thigh
         b. Swelling
         c. Bruising
         d. Weakness
E. Patella tendinopathy [Both]
1. Symptoms
   a. Pain during activity
   b. Swelling
   c. Thickening of the tendon
   d. Crepitus
   e. Tenderness
2. No improvement with at least 3 months of conservative therapy [All]
   a. Activity modification for at least 3 months
   b. Ice
   c. NSAIDS for at least 3 months

F. Achilles tendon tear or rupture with negative or non-diagnostic x-ray and an ultrasound that does not explain the symptoms [Both]
1. Symptoms [One of the following]
   a. Posterior heel pain proximal to tendon insertion
   b. Thickening of the tendon
   c. Nodularity of the tendon
   d. Tenderness
   e. Stiffness on weight bearing after prolonged immobility
2. Findings on examination [One of the following]
   a. Decreased plantar flexor strength
   b. Limited ability to perform repetitive heel raises
   c. Positive arc sign
   d. Positive Thompson test or Simmonds squeeze test
   e. Palpable gap in the tendon

G. Achilles tendinopathy or tendonitis with no improvement after 6 months of conservative management to consist of ice, rest and anti-inflammatory medication usually NSAIDS [One of the following]
1. Pain or tenderness proximal to the insertion to the calcaneus
2. Crepitation

H. Peroneal tendon syndromes and failure to respond to RICE and NSAIDS (if not contraindicated) for at least 4 weeks and a non-diagnostic x-ray (Only one MRI is required to image the entire peroneal tendon.) [One of the following]
1. Tendinitis [One of the following]
   a. Pain behind and distal to the lateral malleolus
   b. Swelling
   c. Tenderness
2. Peroneal tendon subluxation [One of the following]
   a. Snapping along the lateral ankle
   b. Pain along the lateral ankle
   c. Pain with toe walking
   d. Pain and swelling over the posterior lateral ankle
3. Peroneal tendon tear [One of the following]
   a. Acute injury with pain and swelling inferior and posterior to lateral malleolus
   b. Chronic injury increasing pain inferior and posterior to the lateral malleolus
4. Ankle sprains with no response to conservative management for at least 4 weeks with RICE and anti-inflammatory non-steroidals (if not contraindicated)
a. Physical examination [One of the following]
   i. Swelling and/or bruising
   ii. Tenderness
   iii. Difficulty bearing weight

I. Muscle injury
   1. Defect palpable
   2. Pain on movement with palpable muscle swelling

III. Suspected tarsal coalition\(^7,8\) with pain over the site and non diagnostic CT scan [one of the following]
   A. Rigid flatfoot with peroneal spasm
   B. Pain relieved by rest
   C. Peroneal tendon spasms
   D. History of ankle sprains

IV. Plantar fasciitis\(^9-11\) with pain and no response to conservative management for at least 6 weeks consisting of stretching exercises, activity modification and NSAIDS or other anti-inflammatory medications unless contraindicated and negative weight bearing x-rays of the foot and heel
   A. Pronated foot
   B. Localized swelling or atrophy of the infracalcaneal heel pad

V. Os trigonum syndrome [All]\(^12-14\)
   A. X-ray of the ankle
   B. Symptoms
      1. Pain posterior ankle which may be exacerbated by plantar or dorsiflexion
      2. Swelling posterior ankle
   C. Clinical examination
      1. Tenderness anterior to the Achilles tendon and posterior to the talus
      2. May have a palpable soft tissue thickening
   D. Conservative therapy
      1. Failure to respond to physical therapy
      2. Failure to respond to steroid injections

VI. Arteriovenous malformation or venous malformation\(^15-18\) [One of the following]
   A. Hypertrophy of soft tissues of the extremity
   B. Limb length discrepancy
   C. History of Klippel-Trenaunay syndrome of variant
   D. History of Osler-Weber-Rendu syndrome
   E. History of Parkes Weber syndrome
   F. Hemorrhage into a limb
   G. Pulsating soft tissue mass [One of the following]
      1. Thrill
      2. Bruit
   H. Port-wine stain
   I. Dilated veins
1. Must have negative duplex Doppler evaluation for venous insufficiency

VII. Morton's neuroma with an equivocal ultrasound and forefoot pain that radiates to the toes (contrast enhanced study is strongly preferred) [One of the following]19
   A. Mulder's sign or click
   B. Pain persists after a series of steroid injections

VIII. Soft tissue mass including soft tissue sarcoma (MRI without and with contrast is strongly preferred except for the evaluation of a ganglion.) [One of the following]20-23
   A. Palpable soft tissue mass not thought to be a lipoma
   B. Calcifications on plain film which are not definitely benign
   C. Follow up of spontaneous bleed into the soft tissues
   D. Increasing size of known soft tissue mass
   E. Recent trauma, suspected hematoma negative US
   F. Suspected ganglion (most common in hand and wrist when they occur in the upper extremity) which fails to respond to aspiration or recurs after aspiration or is solid on transillumination or ultrasound
   G. Suspected lipoma must have non diagnostic CT
   H. Soft tissue sarcoma of the extremity [One of the following]
      1. Initial staging
      2. Follow up after surgery to establish a new baseline
      3. Post operative imaging after primary therapy for any stage tumor
      4. Surveillance for local recurrence in an asymptomatic individual [One of the following]
         a. 3-6 months for 5 years
         b. Annually years 5-10
      5. Suspicion of local recurrence [One of the following]
         a. New or recurrent symptoms
         b. New or recurrent mass
         c. New changes on x-ray or other imaging

IX. Tarsal tunnel syndrome, posterior tibial nerve compression8,24 [All]
   A. Clinical findings [One of the following]
      1. Aching, burning or tingling of the sole of the foot, toes or heel
      2. Positive Tinel's sign posterior to medial malleolus
      3. Positive dorsiflexion-eversion test
      4. Numbness
      5. Nerve conduction study (NCS) consistent with compression at tarsal tunnel
   B. No response to conservative management [(1+2) and (3 or 4 or 5)]
      1. Rest and non weight bearing
      2. Ice
      3. Continued pain after treatment with anti-inflammatory medication for at least 4 weeks unless contraindicated
      4. Injections
      5. Pain worsening during treatment
C. Negative or equivocal x-ray

X. Child abuse

References:

I. **Suspected or known osteomyelitis with bone pain**¹⁻⁵ [One of the following]
   A. Clinical and laboratory findings [One of the following]
      1. ESR > 20 mm/hr
      2. Aural temperature > 38.3°C or 100.9°F
      3. Leukocytosis, WBC > 11,500/cu.mm
      4. C-reactive protein > 10 mg/L
      5. Blood culture positive
      6. X-ray suggestive of osteomyelitis
   B. History of diabetes, dialysis or peripheral vascular disease
   C. History of penetrating injury or surgery near the involved bone
   D. Sinus tract, poor wound or fracture healing
   E. Preoperative evaluation of osteomyelitis
   F. Positive probe to bone test
   G. Post treatment evaluation

II. **Bone tumor**⁶⁻¹⁰ [One of the following]
   A. Suspected bone tumor [One of the following]
      1. Pain despite negative x-ray
      2. Radiography suspicious for malignancy
   B. Follow-up osteosarcoma of the lower extremity [One of the following]
      1. Follow up after treatment to establish a new baseline
      2. Every 3 months for 2 years
      3. Every 4 months for the third year
      4. Every 6 months for year 4 and 5
      5. Annually after year 5
   C. Follow up of Ewing’s sarcoma [One of the following]
      1. Follow up after treatment to establish a new baseline
      2. Every 2 months for 2 years
      3. Every 4 months for the third year
      4. Every 6 months for years 4 and 5
      5. Annually after year 5
   D. Follow up of chondrosarcoma [One of the following]
      1. Low grade and intracompartmental
      2. Follow up after treatment to establish a new baseline
         a. Every 6-12 months for 2 years
         b. Annually after 2 years
      3. High grade (grade II, grade III, or clear cell or extracompartmental)
      4. Follow up after treatment to establish a new baseline
         a. MRI as clinically indicated
E. New or worsening symptoms with known bone tumor of the upper extremity [One of the following]
   1. Increasing or worsening pain
   2. New changes on recent x-ray
   3. Known malignancy and new onset of bone pain with non diagnostic bone scan and x-ray

F. Known primary malignancy other than bone (MRI without contrast is preferred) [One of the following]
   1. Bone pain with known malignancy and non diagnostic bone scan
   2. Elevated alkaline phosphatase (>140 IU/L) with known malignancy and non diagnostic bone scan
   3. Known bone metastases with pathologic fracture
   4. Known malignancy with back pain and collapsed vertebra
   5. Positive bone scan with no pain

G. Osteoid osteoma – CT is the study of choice [One of the following]
   1. Clinical [One of the following]
      a. Bone pain worse at night which is relieved by aspirin
      b. Pain increases with activity
   2. Known diagnosis and planning for surgery
   3. Known diagnosis and planning for radiofrequency ablation
   4. Known diagnosis and post intervention evaluation to establish a new baseline

III. Soft tissue mass including soft tissue sarcoma (MRI without and with contrast is preferred except for the evaluation of a ganglion.) [One of the following]10-14

A. Palpable soft tissue mass not thought to be a lipoma
B. Calcifications on plain film which are not definitely benign
C. Follow up of spontaneous bleed into the soft tissues
D. Increasing size of known soft tissue mass
E. Recent trauma, suspected hematoma negative US
F. Suspected ganglion (most common in hand and wrist when they occur in the upper extremity) which fails to respond to aspiration or recurs after aspiration or is solid on transillumination or ultrasound
G. Suspected lipoma must have non diagnostic CT
H. Soft tissue sarcoma of the extremity [One of the following]
   1. Initial staging
   2. Follow up after surgery to establish a new baseline
   3. Post operative imaging after primary therapy for any stage tumor
   4. Surveillance for local recurrence in an asymptomatic individual [One of the following]
      a. 3-6 months for 5 years
      b. Annually years 5-10
   5. Suspicion of local recurrence [One of the following]
      a. New or recurrent symptoms
      b. New or recurrent mass
      c. New changes on x-ray or other imaging

IV. Arteriovenous malformation or venous malformation15-18 [One of the following]
A. Hypertrophy of soft tissues of the extremity
B. Limb length discrepancy  
C. History of Klippel-Trenaunay syndrome of variant  
D. History of Osler-Weber-Rendu syndrome  
E. History of Parkes Weber syndrome  
F. Hemorrhage into a limb  
G. Pulsating soft tissue mass [One of the following]  
   1. Thrill  
   2. Bruit  
H. Port-wine stain  
I. Dilated veins  
   1. Must have negative duplex Doppler evaluation for venous insufficiency  

V. Morton’s neuroma with an equivocal ultrasound and forefoot pain that radiates to the toes (Contrast enhanced study is strongly preferred.) [One of the following]19-21  
   A. Mulder’s sign or click  
   B. Pain persists after a series of steroid injections  

VI. Soft tissue abscess with negative ultrasound and tender or warm or erythematous area [One of the following]  
   A. Aural temperature >38.3°C or >100.9°F  
   B. Leukocytosis, WBC > 11,500/cu mm  
   C. ESR > 20mm/hr  
   D. CRP > 10 mg/L  

References:  


Additional Medicare References:


27. Local Coverage Determination for Magnetic Resonance Imaging (L28723), Wisconsin Physicians Service Insurance Corporation, Nebraska, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=36&CntrctrType=1%7c9&KeyWord=73719&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=73719&kq=true&bc=IAAAAAAAAN.


73719, 73720 MRI Lower Extremity Other than Joints

Clinical criteria reviewed/revised: 7/18/12, 6/7/12, 9/6/11, 11/17/10, 7/21/10, 12/09, 1/21/09
Medical Advisory Committee reviewed and approved: 9/21/11
I. Chronic ankle or foot pain negative or non diagnostic x-ray and no improvement after at least 4 weeks of conservative management as described in A below¹-³
   A. No improvement with conservative management [One of the following]
      1. Continued pain after treatment with anti-inflammatory medication and physical therapy for at least 4 weeks
      2. Symptoms worsening while under treatment

II. Suspected intra-articular loose body with recent x-ray⁴,⁵
   A. Clinical presentation [One of the following]
      1. Joint pain
      2. Locking
      3. Clicking
      4. Giving way

III. Suspected or known avascular necrosis (osteonecrosis, OCD, AVN, osteochondritis dissecans, Freiberg’s infraction) with pain¹ (MRI is the preferred imaging test) [Risk factor and history or physical finding]
   A. Risk factors and pain [One of the following]
      1. Steroid use
      2. Sickle cell disease
      3. Excessive alcohol use
      4. HIV infection
      5. SLE
      6. Renal Transplant
      7. Trauma [One of the following]
         a. Fracture
         b. Dislocation
      8. Coagulopathy
      9. Bisphosphonates
      10. Smoking
   B. Physical findings and/or history [One of the following]
      1. Swelling
      2. Stiffness
      3. Weakness
      4. Symptoms exacerbated by prolonged standing
      5. Joint effusion
      6. Instability
      7. Giving way
      8. Catching
      9. Grinding
IV.  Suspected fracture (stress, insufficiency or occult) with negative or non-diagnostic x-ray at the onset of pain\textsuperscript{5-10} [One of the following]
   A. Repeat x-ray 10-14 days after onset of symptoms (the first x-ray may be waived if the only x-ray study is taken 10-14 days after the onset of symptoms) except if a Lisfranc fracture is suspected (see X below)
   B. Bone scan positive but not specific for fracture
   C. Osteoporosis on bone density scan or long term steroid use
   D. Child abuse

V.  Tarsal tunnel syndrome, posterior tibial nerve compression and failure to respond to conservative therapy with injections of steroids or local anesthesia or symptoms worsening during trial of conservative management\textsuperscript{10,12}
   A. Clinical findings [One of the following]
      1. Aching, paresthesias, burning or tingling of the sole of the foot, toes or heel
      2. Positive Tinel's sign
      3. Positive dorsiflexion eversion test
      4. Nerve Conduction Study (NCS) consistent with compression at tarsal tunnel

VI. Suspected tarsal coalition with pain relieved by rest\textsuperscript{11} (CT is preferred) [One of the following]
   A. Rigid flatfoot with peroneal spasm
   B. Peroneal tendon spasms
   C. History of ankle sprains

VII. Plantar fasciitis not responding to at least 4 weeks of activity modification, stretching exercises and anti-inflammatory medication\textsuperscript{11,13-18} [One of the following]
   A. Pain on initiation of walking especially along the medial side of the heel
   B. Increasing heal pain with prolonged weight bearing
   C. Morning heel pain
   D. Pronated foot
   E. Localized swelling or atrophy of the infracalcaneal heel pad

VIII. Ankle injuries with negative or non-diagnostic x-rays \textsuperscript{18-27}
   A. Achilles tendon tear or rupture and an ultrasound that does not explain the symptoms [Both]
      1. Symptoms [One of the following]
         a. Posterior heel pain proximal to tendon insertion
         b. Stiffness on weight bearing after prolonged immobility
      2. Findings on examination [One of the following]
         a. Decreased ankle plantar flexor strength
         b. Limited ability to perform repetitive heel raises
         c. Positive arc sign
         d. Positive Thompson test or Simmonds squeeze test
         e. Palpable gap in the tendon
B. Achilles tendinopathy or tendonitis with no improvement after 6 months of conservative management to consist of ice, rest and anti-inflammatory medication usually NSAIDS [one of the following]
   1. Pain or tenderness proximal to the insertion to the calcaneus
   2. Crepitation

C. Peroneal tendon syndromes and failure to respond to RICE and NSAIDS (if not contraindicated) for at least 4 weeks and non diagnostic x-ray (only one MRI is required to image the entire peroneal tendon) [One of the following]
   1. Tendinitis [One of the following]
      a. Pain behind and distal to the lateral malleolus
      b. Ankle pain with active eversion and dorsiflexion against resistance
   2. Peroneal tendon subluxation [One of the following]
      a. Snapping along the lateral ankle
      b. Pain along the lateral ankle
      c. Pain with toe walking
      d. Pain and swelling over the posterior lateral ankle
   3. Peroneal tendon tear [One of the following]
      a. Acute injury with pain and swelling inferior and posterior to lateral malleolus
      b. Chronic injury increasing pain inferior and posterior to the lateral malleolus
   4. Ankle sprains with no response to conservative management for at least 4 weeks with RICE and anti-inflammatory non steroidal (unless contraindicated)
      a. Physical examination [One of the following]
         i. Swelling and/or bruising
         ii. Tenderness
         iii. Difficulty bearing weight

D. Anterior tibiofibular ligament injury (may be associated with proximal fracture of the fibula)
   1. Physical examination [One of the following]
      a. Pain with dorsiflexion of the ankle
      b. Point tenderness over the anterior lateral tibiofibular joint
      c. Lateral ankle instability
      d. Positive squeeze test
   2. Positive external rotation stress test

E. Deltoid ligament injury

F. Anterior Talofibular Ligament (ATFL) Injury
   1. Findings on physical examination [One of the following]
      a. Pain anterolateral side of joint
      b. Edema anterolateral side of joint
      c. Positive anterior draw test limited and painful inversion of the ankle

G. Calcaneofibular ligament injury
   1. Findings on physical examination [One of the following]
      a. Pain on lateral side of joint
      b. Swelling lateral side of joint
      c. Ecchymosis lateral side of joint
      d. Positive talar tilt test

H. Suspected posterior tibial tendon rupture [One of the following]
   1. Pain and tenderness along tendon path (especially posterior to the medial malleolus)
2. Patient is unable to lift heel off ground when standing on one foot
   I. Posterior tibial tendinopathy [One of the following]
      1. Pain and swelling posterior to the medial malleolus
      2. Pain in the medial aspect of the ankle which increases with weight bearing and inversion
         and plantar flexion against resistance
   J. Anterior tibial tendinopathy [One of the following]
      1. Pain over the anterior ankle
      2. Weak dorsiflexion of the foot

IX. Osteoid osteoma\textsuperscript{28} negative CT scan (CT is preferred)
   A. Clinical [One of the following]
      1. Bone pain worse at night which is relieved by aspirin
      2. Pain increases with activity
   B. Known diagnosis and planning for surgery
   C. Known diagnosis and planning for radiofrequency ablation
   D. Known diagnosis and post intervention evaluation to establish a new baseline

X. Morton's neuroma with non diagnostic ultrasound and no improvement with
   conservative management consisting of shoe modification or orthotics, anti-
   inflammatory medication or local injection of steroids and/or local
   anesthetics\textsuperscript{10,29-31} (MRI without and with contrast is preferred)
   A. Forefoot pain which radiates to the toes
   B. Foot pain aggravated by wearing tight or high-heeled shoes, relieved by barefoot walking
   C. 
   D. Positive Mulder's click

XI. Lisfranc injury with negative or non diagnostic x-rays\textsuperscript{32}
   A. Symptoms [One of the following]
      1. Inability to bear weight
      2. Swelling
      3. Pain of the mid-foot
      4. Bruising on the dorsum of the foot

XII. Os Trigonum syndrome with negative or non diagnostic x-ray and failure to
    respond to conservative therapy consisting of physical therapy and steroid
    injections [Both A and B]\textsuperscript{33,34}
    A. Symptoms [One of the following]
       1. Pain posterior ankle which may be exacerbated by plantar or dorsiflexion
       2. Swelling posterior ankle
    B. Clinical examination [One of the following]
       1. Tenderness anterior to the Achilles' tendon and posterior to the talus
          May have a palpable soft tissue thickening

XIII. Child abuse
XIV. Soft tissue mass including soft tissue sarcoma (MRI without and with contrast is strongly preferred except for the evaluation of a ganglion) [One of the following]

A. Palpable soft tissue mass not thought to be a lipoma
B. Calcifications on plain film which are not definitely benign
C. Follow up of spontaneous bleed into the soft tissues
D. Increasing size of known soft tissue mass
E. Recent trauma, suspected hematoma negative US
F. Suspected ganglion (most common in hand and wrist when they occur in the upper extremity) which fails to respond to aspiration or recurs after aspiration or is solid on transillumination or ultrasound
G. Suspected lipoma must have non diagnostic CT
H. Soft tissue sarcoma of the extremity [One of the following]
   1. Initial staging
   2. Follow up after surgery to establish a new baseline
   3. Post operative imaging after primary therapy for any stage tumor
   4. Surveillance for local recurrence in an asymptomatic individual [One of the following]
      a. 3-6 months for 5 years
      b. Annually years 5-10
   5. Suspicion of local recurrence [One of the following]
      a. New or recurrent symptoms
      b. New or recurrent mass
      c. New changes on x-ray or other imaging

References:


73721 MRI Lower Extremity Joint: Ankle or Foot

Clinical criteria reviewed/revised: 8/30/12, 7/19/12, 6/7/12, 9/13/11, 11/17/10, 1/20/10
Medical Advisory Committee reviewed and approved: 9/19/12, 6/27/12, 9/21/11
I. Chronic hip pain with negative or non-diagnostic x-ray and no history of trauma, cancer, or infection and no improvement after at least 4 weeks of conservative management as described in A below\(^1\)-\(^4\)
   A. No improvement after conservative management [One of the following]
      1. Continued pain after treatment with anti-inflammatory medication and physical therapy for at least 4 weeks
      2. Symptoms worsening while under treatment

II. Suspected intra-articular loose body with recent x-ray\(^5\)
   A. Clinical presentation [One of the following]
      1. Joint pain
      2. Locking
      3. Giving way
      4. Clicking

III. Suspected or known avascular necrosis (osteonecrosis, OCD, AVN, osteochondritis dissecans) with pain and recent x-ray which is either negative or non-diagnostic except for the hip\(^1\),\(^6\)-\(^8\) (MRI is the preferred imaging test) [risk factor and history or physical finding]
   A. Risk factors and pain [One of the following]
      1. Steroid use
      2. Sickle cell disease
      3. Excessive alcohol use
      4. HIV infection
      5. SLE
      6. Renal transplant
      7. Trauma [One of the following]
         a. Fracture
         b. Dislocation
      8. Coagulopathy
      9. Bisphosphonates
     10. Smoking
   B. Physical findings and history [One of the following]
      1. Radiography with a collapsed femoral head
      2. Pain in the hip(s) with a suspicious but non-diagnostic x-ray
      3. Hip pain with normal x-ray and a risk factor in A
      4. Stress fracture of the femoral neck
      5. Pain increases with activity
      6. Pain, may be in the groin

IV. Suspected hip fracture with negative x-ray\(^9\)-\(^11\)
V. Hip injury\textsuperscript{11}
   A. Suspected femoral neck fracture with negative x-rays

VI. Gaucher's disease\textsuperscript{12}

VII. Legg-Calve-Perthes Disease\textsuperscript{13}
   A. Limp
   B. Hip or knee pain

VIII. Slipped capital femoral epiphysis with positive x-ray\textsuperscript{14}

IX. Osteoid osteoma (CT is preferred)\textsuperscript{15} [One of the following]
   A. Clinical [Both]
      1. Bone pain worse at night which is relieved by aspirin
      2. Pain increases with activity
   B. Known diagnosis and planning for surgery
   C. Known diagnosis and planning for radiofrequency ablation
   D. Known diagnosis and post intervention evaluation to establish a new baseline

X. Femoroacetabular impingement syndrome or hip impingement and an x-ray\textsuperscript{16-18} [One of the following] (MR arthrogram is preferred CPT 73722) [All]
   A. Symptoms [One of the following]
      1. Pain with prolonged sitting
      2. Difficulty getting in and out of a car
      3. Pain reproduced by flexion or adduction or internal rotation of the hip when supine.
      4. Complaints of anterolateral hip pain
   B. Positive FADIR test (flexion-abduction-internal rotation)

XI. Labral tear\textsuperscript{19,20} (MR arthrogram is strongly preferred 73722)
   A. Symptoms [One of the following]
      1. Groin pain
      2. Clicking
      3. Instability
      4. Decreased range of motion
      5. Locking
      6. Catching
      7. Positive FADIR test (flexion-abduction-internal rotation)
   B. Radiographic findings suggestive of impingement such as cam lesion or pincer lesion

XII. Pigmented villonodular synovitis\textsuperscript{1}

XIII. Child abuse

XIV. Soft tissue mass including soft tissue sarcoma (MRI without and with contrast is strongly preferred except for the evaluation of a ganglion) [One of the following]\textsuperscript{21-25}
A. Palpable soft tissue mass not thought to be a lipoma
B. Calcifications on plain film which are not definitely benign
C. Follow up of spontaneous bleed into the soft tissues
D. Increasing size of known soft tissue mass
E. Recent trauma, suspected hematoma negative US
F. Suspected ganglion (most common in hand and wrist when they occur in the upper extremity) which fails to respond to aspiration or recurs after aspiration or is solid on transillumination or ultrasound
G. Suspected lipoma must have non diagnostic CT
H. Soft tissue sarcoma of the extremity [One of the following]
   1. Initial staging
   2. Follow up after surgery to establish a new baseline
   3. Post operative imaging after primary therapy for any stage tumor
   4. Surveillance for local recurrence in an asymptomatic individual [One of the following]
      a. 3-6 months for 5 years
      b. Annually years 5-10
   5. Suspicion of local recurrence [One of the following]
      a. New or recurrent symptoms
      b. New changes on x-ray or other imaging
References:


73721 MRI Lower Extremity Joint: Hip

Clinical criteria reviewed/revised: 7/19/12, 9/13/11, 11/17/10, 11/18/09
Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
I. Knee pain/swelling and/or giving way (instability) without history of injury and a non diagnostic x-ray (normal or effusion)¹,²
   A. No response to conservative management consisting of ice, low impact exercises and muscular strength and flexibility exercises and anti-inflammatory medication including acetaminophen and/or topical capsaicin for at least 3 weeks

II. Suspected intra-articular loose body with recent x-ray²,³
   A. Clinical presentation [One of the following]
      1. Joint pain
      2. Locking
      3. Giving way
      4. Clicking

III. Suspected or known avascular necrosis (osteonecrosis, OCD, AVN, osteochondritis dissecans) with pain and recent x-ray which may be either negative or non-diagnostic or diagnostic of AVN but additional information is needed to determine management (MRI is the preferred imaging test)²-⁶ [One risk factor and one selection from history or physical finding or clarification of findings on other imaging]
   A. Risk factors and pain [One of the following]
      1. Steroid use
      2. Sickle Cell Disease
      3. Excessive alcohol use
      4. HIV infection
      5. SLE
      6. Renal Transplant
      7. Trauma [One of the following]
         a. Fracture
         b. Dislocation
      8. Coagulopathy
      9. Bisphosphonates
      10. Smoking
   B. Physical findings and history [One of the following]
      1. Catching
      2. Locking
      3. Snapping
      4. Inability to bear weight
      5. Popping
      6. Swelling and/or effusion
      7. Tenderness
8. Giving way
9. Stiffness
10. Crepitus
C. Known osteonecrosis, AVN or OCD by x-ray

IV. **Suspected fracture with negative x-ray or a Segond fracture on x-ray (including stress and occult fractures)** [7-9] [One of the following]
A. Repeat x-ray 10-14 days after onset of symptoms (The first x-ray may be waived if the only x-ray study is taken 10-14 days after the onset of symptoms.)
B. Bone scan positive but not specific for fracture
C. Osteoporosis on bone density or long term steroid use
D. Child abuse

V. **Knee injuries** [11-20] [One of the following]
A. Knee pain secondary to acute injury and negative or non diagnostic x-ray or x-ray showing Segond fracture [One of the following]
   1. Joint effusion
   2. Inability to bear weight
   3. Pain significantly limiting mobility on physical examination
   4. Locked knee
   5. Inability to fully extend the knee
   6. Meniscal tear [One of the following]
      a. Bloody effusion
      b. Locking
      c. Inability to fully extend the knee
      d. Crepitus
      e. Buckling and catching
      f. Joint line tenderness
      g. Positive Apley test
      h. Positive McMurray test
B. Motor vehicle accident with suspected posterior dislocation of the knee
C. Suspected meniscal tear without history of acute injury and a negative or non diagnostic x-ray [One of the following]
   1. Findings on physical examination and no improvement with conservative management consisting of rest, ice and strengthening exercises for at least 4 weeks or symptoms worsening with conservative management [One of the following]
      a. Positive McMurray's test
      b. Joint line tenderness
      c. Effusion
      d. Pain with flexion and rotation
      e. A sensation of popping, clicking, or snapping
   2. Inability to straighten the knee – locked
D. Injuries to ligaments [One of the following]
   1. Suspected anterior cruciate ligament injury [One of the following]
      a. Rapid development of an effusion which may be bloody
      b. Instability of the knee
c. Positive anterior drawer sign
d. Positive Lachman’s sign
e. Positive pivot shift test

2. Suspected posterior cruciate ligament injury with no improvement after a trial of RICE (rest, ice, compression and elevation) along with immobilization and physical therapy for at least 4 weeks [One of the following]
a. Positive posterior drawer sign
b. Absent tibial step off (tibia should protrude 1 cm beyond femur at 90 degrees of flexion) or positive posterior tibial sag sign (Godfrey test)
c. Positive reverse pivot shift test
d. Rapid onset of swelling

3. Suspected LCL or MCL injury
a. MCL
   i. Positive valgus stress test (knee opens medially with stress to tibia)
b. LCL
   i. Positive varus stress test

E. Suspected quadriceps tendon injury with negative or non-diagnostic x-ray [One of the following]
1. Acute knee pain and swelling
2. Difficulty ambulating
3. Bruising
4. Palpable defect in the suprapatellar area
5. Low lying patella
6. Limited extension

F. Tendonitis or tendonosis with no response to a course of conservative management for at least 4 weeks including activity modification and physical therapy or a course of home exercises for strengthening and stretching along with anti-inflammatory medications and pain over the tendon with tenderness on palpation

VI. Suspected Baker’s cyst or popliteal cyst with negative or non-diagnostic popliteal fossa ultrasound\textsuperscript{21, 22} [One of the following]
A. Popliteal mass or bulge
B. Leg swelling
C. Posterior knee pain

VII. Patellofemoral pathology or runner’s knee (including patellar tracking disorder) with either negative x-ray or x-ray demonstrating an effusion, degenerative arthritis, or chondrocalcinosis and no improvement with conservative management consisting of rest, ice and physical therapy for at least 6 weeks\textsuperscript{1,2,18,23,24} [Both]
A. Symptoms and history [One of the following]
   1. Anterior knee pain or pain described as behind underneath or around the patella
   2. Pain on squatting
   3. Pain when walking up or down stairs
B. Clinical findings [One of the following]
   1. Positive apprehension test for patella dislocation
2. Positive Clark’s test
3. Popping or clicking of the patella
4. Abnormal patella tracking
5. Positive patella grind test

VIII. Osteoid osteoma and negative CT scan\textsuperscript{25, 26} (CT is preferred)

A. Clinical [One of the following]
   1. Bone pain worse at night which is relieved by aspirin
   2. Pain increases with activity
B. Known diagnosis and planning for surgery
C. Known diagnosis and planning for radiofrequency ablation
D. Known diagnosis and post intervention evaluation to establish a new baseline

IX. Fitting of implants for total knee arthroplasty

X. Septic arthritis – see 73722 and 73723

XI. Aggressive arthritis – see 73722 and 73723

XII. Osteomyelitis – see 73722 and 73723

XIII. Child abuse
References:


73721 MRI Lower Extremity Joint: Knee

Clinical criteria reviewed/revised: 7/18/12, 6/2/12, 9/12/11, 11/17/10, 11/18/09
Medical Advisory Committee reviewed and approved: 9/19/12, 6/27/12, 9/21/11
I. Suspected or known osteomyelitis with pain\textsuperscript{1-6} [One of the following]
   A. Clinical and laboratory findings [One of the following]
      1. ESR >20 mm/hr
      2. Aural temperature >38.3°C or 100.9°F
      3. Leukocytosis, WBC >11,500/cu.mm
      4. C-reactive protein >10 mg/L
      5. Blood culture positive
      6. X-ray suggestive of osteomyelitis
   B. History of diabetes, dialysis or peripheral vascular disease
   C. History of penetrating injury or surgery near the involved bone
   D. Sinus tract, poor wound or fracture healing
   E. Preoperative evaluation of osteomyelitis
   F. Positive probe to bone test
   G. Post treatment evaluation

II. Morton’s neuroma with non-diagnostic ultrasound and no improvement with conservative management consisting of shoe modification or orthotics, anti-inflammatory medication or local injection of steroids and/or local anesthetics (Contrast enhanced study is strongly preferred.) [One of the following]\textsuperscript{7-12}
   A. Forefoot pain which radiates to the toes
   B. Foot pain aggravated by wearing tight or high-heeled shoes, relieved by barefoot walking
   C. Positive Mulder’s click

III. Arthritis and synovitis\textsuperscript{13-15} with either inadequate response to current treatment or to monitor response to treatment with known rheumatoid of psoriatic arthritis or ankylosing spondylitis

IV. Known or suspected bone tumor\textsuperscript{16-20} [One of the following]
   A. Suspected bone tumor [One of the following]
      1. Pain despite negative x-ray
      2. X-ray suspicious for malignancy
   B. Follow-up osteosarcoma [One of the following]
      1. Following completion of therapy
      2. Every 3 months for 2 years
      3. Every 4 months for the third year
      4. Every 6 months for year 4 and 5
      5. Annually after year 5
   C. Follow-up of Ewing’s sarcoma [One of the following]
1. Following completion of therapy
2. Every 2 months for 2 years
3. Every 4 months for the third year
4. Every 6 months for years 4 and 5
5. Annually after year 5

D. Follow-up of Chondrosarcoma
   1. (Low grade and intracompartmental) [One of the following]
      a. Following completion of therapy
      b. Every 6-12 months for 2 years
      c. Annually after 2 years
   2. High grade (grade II, grade III or clear cell or extracompartmental)
      a. Following completion of therapy
      b. Imaging as clinically indicated

E. New or worsening symptoms with known bone tumor of the upper extremity [One of the following]
   1. Increasing or worsening pain
   2. New changes on recent x-ray
   3. Known malignancy and new onset of bone pain with non diagnostic bone scan and x-ray

F. Known primary malignancy other than bone [One of the following]
   1. Bone pain with known malignancy and non diagnostic bone scan
   2. Elevated alkaline phosphatase (>140 IU/L) with known malignancy and non diagnostic bone scan
   3. Known bone metastases with pathologic fracture
   4. Known malignancy with back pain and collapsed vertebra
   5. Positive bone scan with no pain

G. Osteoid osteoma with a negative x-ray (CT is preferred.)
   1. Clinical [One of the following]
      a. Bone pain worse at night which is relieved by aspirin
      b. Pain increases with activity
   2. Known diagnosis and planning for surgery
   3. Known diagnosis and planning for radiofrequency ablation
   4. Known diagnosis and post intervention evaluation to establish a new baseline

V. MR arthrogram [One of the following]
A. Suspected intra-articular loose body [One of the following]
   1. Pre-operative study
   2. Locking
   3. Clicking
   4. Giving way
B. Anterior tibiofibular ligament injury with non diagnostic MRI and no response to rest, ice, elevation, compression, pain medications such as acetaminophen and exercise for at least 3 weeks

VI. Soft tissue mass including soft tissue sarcoma (MRI without and with contrast is strongly preferred except for the evaluation of a ganglion.) [One of the following]
A. Palpable soft tissue mass not thought to be a lipoma
B. Calcifications on plain film which are not definitely benign
C. Follow up of spontaneous bleed into the soft tissues
D. Increasing size of known soft tissue mass
E. Recent trauma, suspected hematoma negative US
F. Suspected ganglion (most common in hand and wrist when they occur in the upper extremity) which fails to respond to aspiration or recurs after aspiration or is solid on transillumination or ultrasound
G. Suspected lipoma must have non diagnostic CT
H. Soft tissue sarcoma of the extremity [One of the following]
   1. Initial staging
   2. Follow up after surgery to establish a new baseline
   3. Post operative imaging after primary therapy for any stage tumor
   4. Surveillance for local recurrence in an asymptomatic individual [One of the following]
      a. 3-6 months for 5 years
      b. Annually years 5-10
   5. Suspicion of local recurrence [One of the following]
      a. New or recurrent symptoms
      b. New or recurrent mass
      c. New changes on x-ray or other imaging
   6. Known malignancy with back pain and collapsed vertebra
   7. Positive bone scan with no pain
I. Osteoid osteoma with a negative x-ray (CT is preferred.)
   1. Clinical [One of the following]
      a. Bone pain worse at night which is relieved by aspirin
      b. Pain increases with activity
   2. Known diagnosis and planning for surgery
   3. Known diagnosis and planning for radiofrequency ablation
   4. Known diagnosis and post intervention evaluation to establish a new baseline

VII. Septic joint [All] (Ultrasound or x-ray guided arthrocentesis is the procedure of choice.)
A. Arthrocentesis contraindicated or not diagnostic
B. Symptoms [One of the following]
   1. Decreased range of motion
   2. Acute development of a hot swollen joint (< 2 weeks)
C. Laboratory tests [One of the following]
   1. ESR > 20mm/hr
   2. Aural temperature >38.3° C or 100.9° F
   3. Leukocytosis, WBC >11,500/cu.mm
   4. C-reactive protein >10 mg/L

VIII. Soft tissue abscess with negative ultrasound and tender or warm or erythematous area [One of the following]
A. Aural temperature >38.3° C or >100.9° F
B. Leukocytosis, WBC > 11,500/cu.mm
C. ESR > 20 mm/hr
D. C-reactive protein > 10 mg/L

References:


Additional Medicare References:

26. Local Coverage Determination for Magnetic Resonance Imaging (L28723), Wisconsin Physicians Service Insurance Corporation, Iowa, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=17&CntrctrType=1%7c9&KeyWord=73722&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHpcscode=73722&kq=true&bc=IAAAAAAAAAAA&.


73722, 73723 MRI Lower Extremity Joint: Ankle or Foot

Clinical criteria reviewed/revised: 7/19/12, 9/14/11, 11/17/10, 12/09, 1/21/09

Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
I. **Suspected or known osteomyelitis**\(^1-7\) [One of the following]
   A. Clinical and laboratory findings [One of the following]
      1. ESR >20 mm/hr
      2. Aural temperature >38.3°C or 100.9°F
      3. Leukocytosis, WBC >11,500/cu.mm
      4. C-reactive protein >10 mg/L
      5. Blood culture positive
      6. X-ray suggestive of osteomyelitis
   B. History of diabetes, dialysis or peripheral vascular disease
   C. History of penetrating injury or surgery near the involved bone
   D. Sinus tract, poor wound or fracture healing
   E. Preoperative evaluation of osteomyelitis
   F. Positive probe to bone test
   G. Post treatment evaluation

II. **Known or suspected bone tumor**\(^8-12\) [One of the following]
   A. Suspected bone tumor [One of the following]
      1. Pain despite negative x-ray
      2. X-ray suspicious for malignancy
   B. Follow-up osteosarcoma [One of the following]
      1. Follow up after treatment to establish a new baseline
      2. Every 3 months for 2 years
      3. Every 4 months for the third year
      4. Every 6 months for years 4 and 5
      5. Annually after year 5
   C. Follow up of Ewing’s sarcoma [One of the following]
      1. Follow up after treatment to establish a new baseline
      2. Every 2 months for 2 years
      3. Every 4 months for the third year
      4. Every 6 months for years 4 and 5
      5. Annually after year 5
   D. Follow up of chondrosarcoma [One of the following]
      1. Low grade (and intracompartmental) [One of the following]
         a. Follow up after treatment to establish a new baseline
         b. Every 6-12 months for 2 years
         c. Annually after 2 years
      2. High grade (grade II, grade III or clear cell or extracompartmental)
         a. Follow up after treatment to establish a new baseline
         b. Imaging as clinically indicated
   E. New or worsening symptoms with known bone tumor [One of the following]
1. Increasing or worsening pain
2. New changes on recent x-ray
3. Known malignancy and new onset of bone pain with non-diagnostic bone scan and x-ray

F. Known primary malignancy other than bone (MRI without contrast is preferred.) [One of the following]
   1. Bone pain with known malignancy and non-diagnostic bone scan
   2. Elevated alkaline phosphatase (>140 IU/L) with known malignancy and non-diagnostic bone scan
   3. Known bone metastases with pathologic fracture
   4. Known malignancy with back pain and collapsed vertebra
   5. Positive bone scan with no pain

G. Osteoid osteoma with a negative x-ray (CT is preferred.)
   1. Clinical [One of the following]
      a. Bone pain worse at night which is relieved by aspirin
      b. Pain increases with activity
   2. Known diagnosis and planning for surgery
   3. Known diagnosis and planning for radiofrequency ablation
   4. Known diagnosis and post intervention evaluation to establish a new baseline

III. Arthritis and synovitis\textsuperscript{13-15} with either inadequate response to current treatment or to monitor response to treatment with known rheumatoid or psoriatic arthritis or ankylosing spondylitis

IV. MR arthrogram\textsuperscript{16,17} [One of the following]
   A. X-rays consistent with femoroacetabular impingement
   B. Labral tear [One of the following]
      1. Pain
      2. Clicking
      3. Instability
      4. Decreased range of motion
      5. Locking
      6. Catching
      7. Positive FADIR test (flexion-abduction-internal rotation)
   C. X-rays positive for a loose body or osteochondral defect

V. Septic joint [All] (Ultrasound or x-ray guided arthrocentesis is the procedure of choice.)\textsuperscript{18}
   A. Arthrocentesis contraindicated or not diagnostic
   B. Symptoms [One of the following]
      1. Decreased range of motion
      2. Acute development of a hot swollen joint (< 2 weeks)
   C. Laboratory tests [One of the following]
      1. ESR > 20mm/hr
      2. Aural temperature >38.3°C or 100.9°F
      3. Leukocytosis, WBC > 11,500/ cu. mm
      4. C-reactive protein >10 mg/L
VI. Soft tissue abscess with negative ultrasound and tender or warm or erythematous area [One of the following]
   A. Aural temperature >38.3°C or 100.9°F
   B. Leukocytosis, WBC > 11,500/cu.mm
   C. ESR > 20mm/hr
   D. C-reactive protein >10 mg/L

VII. Femoroacetabular impingement syndrome or hip impingement and an x-ray [All] (MR arthrogram is strongly preferred.)\textsuperscript{16,17,19-21}
   A. Symptoms [One of the following]
      1. Pain with prolonged sitting
      2. Difficulty getting in and out of a car
      3. Pain reproduced by flexion or adduction or internal rotation of the hip when supine
      4. Complaints of anterolateral hip pain
      5. Positive FADIR test (flexion-abduction-internal rotation)

VIII. Soft tissue mass including soft tissue sarcoma (MRI without and with contrast is strongly preferred except for the evaluation of a ganglion.) [One of the following]\textsuperscript{22-24}
   A. Palpable soft tissue mass not thought to be a lipoma
   B. Calcifications on plain film which are not definitely benign
   C. Follow-up of spontaneous bleed into the soft tissues
   D. Increasing size of known soft tissue mass
   E. Recent trauma, suspected hematoma negative US
   F. Suspected ganglion (most common in hand and wrist when they occur in the upper extremity) which fails to respond to aspiration or recurs after aspiration or is solid on transillumination or ultrasound
   G. Suspected lipoma must have non diagnostic CT
   H. Soft tissue sarcoma of the extremity [One of the following]
      1. Initial staging
      2. Follow-up after surgery to establish a new baseline
      3. Post operative imaging after primary therapy for any stage tumor
      4. Surveillance for local recurrence in an asymptomatic individual [One of the following]
         a. 3-6 months for 5 years
         b. Annually years 5-10
      5. Suspicion of local recurrence [One of the following]
         a. New or recurrent symptoms
         b. New or recurrent mass
         c. New changes on x-ray or other imaging
References:


Additional References for Medicare:


27. Local Coverage Determination for Magnetic Resonance Imaging (L28723), Wisconsin Physicians Service Insurance Corporation, Michigan, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=27&CntrctrType=1%c79&KeyWord=73722&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CpHcpcsCode=73722&kq=true&bc=IAAAAAAA.
Clinical criteria reviewed/revised: 7/19/12, 6/12/12, 9/13/11, 11/17/10, 11/18/09
Medical Advisory Committee reviewed and approved: 09/19/12; 9/21/11
I. Suspected or known osteomyelitis\textsuperscript{1-6} [One of the following]
   A. Clinical and laboratory findings [One of the following]
      1. ESR >20 mm/hr
      2. Aural temperature > 38.3°C or > 100.9°F
      3. Leukocytosis, WBC > 11,500/cu.mm
      4. C-reactive protein > 10 mg/L
      5. Blood culture positive
      6. X-ray suggestive of osteomyelitis
   B. History of diabetes, dialysis or peripheral vascular disease
   C. History of penetrating injury or surgery near the involved bone
   D. Sinus tract, poor wound or fracture healing
   E. Preoperative evaluation of osteomyelitis
   F. Positive probe to bone test
   G. Post treatment evaluation

II. Known or suspected bone tumor\textsuperscript{7-10} [One of the following]
   A. Suspected bone tumor [One of the following]
      1. Pain despite negative x-ray
      2. X-ray suspicious for malignancy
   B. Follow-up osteosarcoma [One of the following]
      1. Following completion of treatment to establish a new baseline
      2. Every 3 months for 2 years
      3. Every 4 months for the third year
      4. Every 6 months for years 4 and 5
      5. Annually after year 5
   C. Follow up of Ewing’s sarcoma [One of the following]
      1. Following completion of treatment to establish a new baseline
      2. Every 2 months for 2 years
      3. Every 4 months for the third year
      4. Every 6 months for years 4 and 5
      5. Annually after year 5
   D. Follow up of chondrosarcoma [One of the following]
      1. (Low grade and intracompartmental) [One of the following]
         a. Following completion of treatment to establish a new baseline
         b. Every 6-12 months for 2 years
         c. Annually after 2 years
      2. High grade (grade II, grade III or clear cell or extracompartamental)
         a. Following completion of treatment to establish a new baseline
         b. Imaging as clinically indicated
   E. New or worsening symptoms with known bone tumor [One of the following]
1. Increasing or worsening pain
2. New changes on recent x-ray
3. Known malignancy and new onset of bone pain with non diagnostic bone scan and x-ray

F. Known primary malignancy other than bone (MRI without contrast is preferred) [One of the following]
   1. Bone pain with known malignancy and non diagnostic bone scan
   2. Elevated alkaline phosphatase (>140 IU/L) with known malignancy and non diagnostic bone scan
   3. Known bone metastases with pathologic fracture
   4. Known malignancy with back pain and collapsed vertebra
   5. Positive bone scan with no pain

G. Osteoid osteoma with a negative x-ray (CT is preferred)
   1. Clinical [One of the following]
      a. Bone pain worse at night which is relieved by aspirin
      b. Pain increases with activity
   2. Known diagnosis and planning for surgery
   3. Known diagnosis and planning for radiofrequency ablation
   4. Known diagnosis and post intervention evaluation to establish a new baseline

III. Arthritis and synovitis\textsuperscript{11-13} with either inadequate response to current treatment or to monitor response to treatment with known rheumatoid of psoriatic arthritis or ankylosing spondylitis

IV. Soft tissue mass including soft tissue sarcoma with negative x-ray (MRI without and with contrast is preferred except for the evaluation of a ganglion) [One of the following]\textsuperscript{14-17}
   A. Palpable soft tissue mass not explained by the plain film
   B. Calcifications on plain film which are not definitely benign
   C. Follow up of spontaneous bleed into the soft tissues
   D. Increasing size of known soft tissue mass
   E. Recent trauma, suspected hematoma negative US
   F. Suspected ganglion (most common in hand and wrist when they occur in the upper extremity) which fails to respond to aspiration or recurs after aspiration or is solid on transillumination or ultrasound
   G. Suspected lipoma must have non diagnostic CT
   H. Soft tissue sarcoma (imaging must be performed prior to biopsy) [One of the following]
      1. Initial staging
      2. Follow up after surgery for new baseline
      3. Surveillance for local recurrence in an asymptomatic individual [One of the following]
         a. 3-6 months for 5 years
         b. Annually years 5-10
      4. Suspcion of local recurrence [One of the following]
         a. New or recurrent symptoms
         b. New or recurrent mass
         c. New changes on x-ray or other imaging
V. Septic joint with recent arthrocentesis contraindicated or not diagnostic [All] 
(Ultrasound or x-ray guided arthrocentesis is the procedure of choice)\textsuperscript{18}
A. Symptoms [One of the following]
   1. Decreased range of motion
   2. Acute development of a hot swollen joint (< 2 weeks)
B. Laboratory tests [One of the following]
   1. ESR > 20mm/hr
   2. Aural temperature > 38.3°C or > 100.9°F
   3. Leukocytosis, WBC > 11,500/ cu. mm
   4. C-reactive protein > 10 mg/L

VI. Soft tissue abscess with negative ultrasound and tender or warm or 
erythematous area [One of the following]
A. Aural temperature > 38.3°C or > 100.9°F
B. Leukocytosis, WBC > 11,500/cu mm
C. ESR > 20mm/hr
D. C-reactive protein > 10 mg/ml

VII. MR Arthrogram\textsuperscript{19} [One of the following]
A. Pain and x-rays demonstrating osteochondral defect or loose body

References:

Additional References for Medicare

25. Local Coverage Determination for Magnetic Resonance Imaging (L28723), Wisconsin Physicians Service Insurance Corporation, Nebraska, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=36&CntrctrType=1%7c9&KeyWord=73722&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=73722&kq=true&bc=IAAAAAAAAAA&.

73722, 73723 MRI Lower Extremity Joint: Knee

Clinical criteria reviewed/revised: 6/12/12, 9/12/11, 11/17/10, 12/09, 1/21/10
Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
I. Peripheral vascular disease (PVD, occlusion or stenosis of arteries of the leg) with abnormal ankle brachial index as defined in A and one additional of the following\textsuperscript{1-3}

A. ABI (ankle brachial index, ankle systolic BP divided by brachial systolic BP) [One of the following]
   1. Rest ABI <0.90 in symptomatic member
   2. Exercise ABI <0.90 in symptomatic member with rest ABI >0.90
   3. Toe brachial index <0.90 or pulse volume recording evidence of peripheral vascular disease if the ABI >1.30

B. Abnormal pulses

C. Bruit

D. Claudication

E. Diabetic with [One of the following]
   1. Skin changes
   2. Loss of hair
   3. Poor capillary refill
   4. Thickened nails
   5. Thin skin

F. Arteritis (Takayasu's arteritis, giant cell arteritis) [One of the following]
   1. ESR > 20mm/hr
   2. Positive ANA
   3. Positive RF or rheumatoid factor

G. Scleroderma

H. Hypercoagulable state [One of the following]
   1. Antiphospholipid antibodies
   2. Behcet's syndrome
   3. Protein C deficiency
   4. Protein S deficiency
   5. Factor V Leiden deficiency
   6. Lupus anticoagulant
   7. Hyperactive platelet syndrome
   8. MRHFR
   9. Anticardiolipin antibodies
   10. Elevated homocysteine level
   11. Anti B2 glycoprotein antibodies
   12. Elevated fibrinogen
   13. PTT abnormal
   14. Antithrombin III antibodies
   15. Oral contraceptive use
   16. Hormone replacement
   17. Sickle cell anemia
I. **Buerger’s disease (thromboangiitis obliterans) [Both]**
   1. History of smoking
   2. Loss of pulses or decreased pulses in the lower extremity

II. **Known peripheral vascular disease with prior catheter angiogram not demonstrating a viable runoff vessel for use in surgical bypass**

III. **Femoral or popliteal artery aneurysm**
   A. Pulsatile mass

IV. **Trauma (popliteal)**
   A. Diminished peripheral pulses
   B. Suspected pseudoaneurysm

V. **Fibular transfer graft**

VI. **Venous aneurysm**

VII. **Deep venous thrombosis (DVT)**
   A. Venous Doppler non diagnostic

References:


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**73725 MRA Lower Extremity**

Clinical criteria reviewed/revised: 8/7/12, 5/21/12, 8/17/11, 11/17/10, 12/09, 1/21/09

Medical Advisory Committee reviewed and approved: 9/19/12, 6/27/12, 9/21/11

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73725  MRA of the Lower Extremity

Medicare AR, CA, CO, CT, DC, DE, FL, HI, IA, IL, IN, KS, LA, MA, MD, ME, MI, MN, MO, MS, NE, NH, NJ, NM, NV, NY, OK, PA, RI, TX, VT, WI

I. Peripheral vascular disease (PVD, occlusion or stenosis of arteries of the leg)
MRA may be performed instead of a catheter angiogram.
If a catheter angiogram has been performed MRA may be performed in addition if the catheter angiogram did not demonstrate a viable run off vessel for bypass

References:
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73725 MRA Lower Extremity: Medicare AR, CA, CO, CT, DC, DE, FL, HI, IA, IL, IN, KS, LA, MA, MD, ME, MI, MN, MO, MS, NE, NH, NJ, NM, NV, NY, OK, PA, RI, TX, VT, WI

Clinical criteria reviewed/rewised: 9/5/11, 11/17/10
Medical Advisory Committee reviewed and approved: 6/27/12, 9/21/11
Note: For radiation therapy planning, use 77014.
For CT guided needle placement, biopsy, or drainage, use 77012.
For CT guided tissue ablation, use 77013.

If there is a note next to an indication stating that CT of the abdomen and pelvis is the appropriate study please refer to CPT codes 74176, 74177 and 74178.

I. Complaints associated with abdominal or pelvic pain\(^1-11\) (CT of the abdomen and pelvis is the appropriate study.)

II. Evaluation of symptoms after any abdominopelvic surgery\(^1\) (CT of the abdomen and pelvis is the appropriate study.)

III. Aneurysm\(^12-20\) (CTA of the abdomen and pelvis is the appropriate study.)

IV. Obstruction of bowel (CT of the abdomen and pelvis is the appropriate study.)\(^21-23\)

V. Known cancer including lymphoma\(^24-66\) (CT of the abdomen and pelvis is the appropriate study. See CPT codes 74176, 74177 and 74178 except for pancreatic cancer adrenal cancer, lung cancer.)

VI. Known or acute suspected pancreatitis or pancreatic pseudocyst [One of the following]\(^67-69\)
   A. Suspected acute pancreatitis with abdominal pain, (exams may be repeated at intervals if there is no improvement on therapy, or signs of complications are present.) [One of the following]
      1. Amylase > 3 times the upper normal laboratory value
      2. Lipase > 3 times the upper normal laboratory value
   B. Known pancreatitis with any of the following allows for repeat exams if present [One of the following]
      1. Hemodynamic instability
         a. Falling hematocrit
         b. Falling blood pressure
      2. Aural temperature > 38.3°C or > 100.9°F
      3. Retroperitoneal air on prior CT
      4. Positive blood culture
      5. Signs of peritonitis (rebound, or guarding or tenderness)
      6. Poor oxygen saturation, signs of ARDS (adult respiratory distress syndrome)
7. Signs of renal failure rising BUN and creatinine
8. Initial clinical state unimproved after 5 days of therapy

C. Suspected pancreatic pseudocyst [Both of the following]
1. History [One of the following]
   a. Acute pancreatitis with onset at least 4 wks earlier
   b. Pancreatitis secondary to trauma (time irrelevant)
   c. Chronic pancreatitis
2. Clinical findings [One of the following]
   a. Abdominal/back pain
   b. Abdominal tenderness
   c. Abdominal mass

D. Evaluation of known pancreatic pseudocyst [One of the following]
1. Periodic evaluation for change in size
2. New or worsening clinical findings such as recurrent abdominal pain, rising amylase or lipase, Aural temperature > 38.3°C or > 100.9°F

E. Pancreatic mass on prior imaging

VII. Chronic pancreatitis with history or recurrent pancreatitis (not helpful for early diagnosis; only confirmation of diagnosis and surgical planning) \(^{70,71}\)

VIII. Pancreatic cancer or mass \(^{41-44,66}\) [One of the following] (Following initial diagnosis, CT of the abdomen and pelvis is the appropriate study.)
A. Symptoms [One of the following]
   1. Weight loss (see XIX below)
   2. Mid-epigastric pain radiating to the back
B. Elevated tumor markers [One of the following]
   1. CA19-9 > 40 IU/L
   2. CEA > 2.5 (non-smoker) or > 5.0 in a smoker
C. Prior imaging with dilatation of the bile duct and/or pancreatic duct (US, ERCP, MRCP)
D. Pancreatic mass on recent prior imaging for “pancreatic protocol”
E. Initial staging of pancreatic cancer if not already performed
F. Painless jaundice (see XV below)
G. Follow up [One of the following]
   1. Immediately following surgery
   2. Following completion of chemotherapy
   3. Every 3-6 months for 2 years
   4. After 2 years annually
H. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. New onset of hydronephrosis documented on ultrasound
9. Lab values elevated/increasing
   a. Rising CEA (>2.5 in non smoker or > 5.0 in smoker)
   b. Rising bilirubin (Total bilirubin > 1.9mg/dL)
   c. Alkaline phosphatase > 140U/L
   d. Rising CA 19-9 > 35 U/mL
10. New onset of BUN > 20mg/dL

IX. Known or suspected adrenal disease or mass including adrenal carcinoma
    [One of the following]^[56,72-75]

   **Note:** With suspected pheochromocytoma, if meets criteria, can also approve CT pelvis as an
   uncommon presentation of pheochromocytoma is extra-adrenal, including the bladder

   A. Suspected pheochromocytoma or paraganglioma [One of the following]
      1. VMA or metanephrine > 7mg/24hr
      2. Catecholamine >normal

   B. Suspected adrenal cortical tumor [One of the following]
      1. 24 hr urine free cortisol > 100mcg/24hr
      2. No suppression by dexamethasone

   C. Suspected aldosteronoma [One of the following]
      1. Hypertension with systolic > 160 and diastolic > 100
      2. Hypertension that is drug resistant
      3. Spontaneous or diuretic-induced hypokalemia
      4. Serum potassium < 3.5mEq/L on 2 different samples
      5. Plasma aldosterone to rennin ratio > 20

   D. Incidental finding with no history of malignancy 1-4 cm in size [One of the following]
      1. No prior non contrast CT performed
      2. Follow up 12 months from the original non contrast CT

   E. Incidental finding on with no history of malignancy > 4 cm in size

   F. Personal history of malignancy

   G. Suspicion of adrenal carcinoma (non functioning tumors > 4 cm in size) [One of the following]
      1. Non functioning adrenal mass > 4 cm in size on prior US
      2. Cushing’s syndrome
      3. Hirsutism in women
      4. Oligomenorrhea
      5. Virilization in women
      6. Gynecomastia
      7. Testicular atrophy
      8. Elevated DHEA-S
      9. Hypertension
      10. Hypokalemia- serum potassium < 3.5mEq/L
      11. Aural temperature > 38.3°C or > 100.9°F
      12. Weight loss
      13. Abdominal pain and tenderness
      14. Palpable abdominal mass

   H. Follow up of treated adrenal carcinoma [One of the following]
      1. Every 3-6 months
X. Splenomegaly with LUQ pain

XI. Complex or solid abdominal or liver mass on recent ultrasound or follow up of known complex or solid mass on prior CT, MRI or ultrasound with no known malignancy\textsuperscript{76,77}

XII. New palpable abdominal mass with non diagnostic ultrasound\textsuperscript{78}

XIII. Known metastatic disease to the liver with no change signs or symptoms may be imaged every 90 days

XIV. New renal mass suspected or detected on prior imaging (For renal cell cancer, see XL below.) [One of the following]\textsuperscript{30}
   A. Clarification of findings on prior imaging with “renal protocol”
   B. Cystic or solid mass detected on ultrasound
      1. Simple cyst confirmed on prior CT to be simple cyst or Bosniak class I cyst – no further imaging is indicated
   C. Bosniak class II cyst on prior CT (or MRI)
      1. CT may be certified every 6 months for 3 years and if stable no further imaging

XV. Evaluation of painless jaundice demonstrated by either direct bilirubin >2 or total bilirubin >1.9, and a negative or non diagnostic ultrasound

XVI. Fever of unknown origin (FUO)\textsuperscript{79} (CT of the abdomen and pelvis is the appropriate study.)

XVII. Abdominal and pelvic trauma (CT of the abdomen and pelvis is the appropriate study.)\textsuperscript{80-82}

XVIII. Cryptorchidism (undescended testicle) (MRI of the abdomen and pelvis is strongly preferred unless contraindicated, and then CT of the abdomen and pelvis is appropriate.)\textsuperscript{83-85}

XIX. Weight loss\textsuperscript{86} (CT of the abdomen and pelvis is the appropriate study.)

XX. Hematuria\textsuperscript{3} (CT of the abdomen and pelvis is the appropriate study.)

XXI. CT enterography\textsuperscript{9,87,88} (CT of the abdomen and pelvis is the appropriate study.)
XXII. Suspected or known neuroendocrine tumor including carcinoid, pheochromocytoma, paraganglioma, islet cell tumor of the pancreas, poorly differentiated or high grade or aggressive small cell tumor other than lung [One of the following]56,89,90 (For carcinoid, pheochromocytoma, paraganglioma and poorly differentiated or high grade or anaplastic small cell carcinoma other than lung, see CT of the abdomen and pelvis, CPT codes 74176, 74177 and 74178.)

A. Carcinoid – see CT of the abdomen and pelvis
B. Islet cell tumor of the pancreas [One of the following]
   1. Gastrinoma or Zollinger-Ellison syndrome [One of the following]
      a. Elevated serum gastrin > 100pg/m
      b. Positive secretin test
      c. May also present with reflux and peptic ulcers
      d. Prominent gastric folds on endoscopy
   2. Insulinoma
      a. Elevated serum insulin > 2.0ng/ml
   3. Glucagonoma
      a. Elevated serum glucagon > 100pg/ml
   4. VIPoma
      a. Elevated vasoactive intestinal polypeptide (VIP) >75pg/ml
   5. Somatostatinoma
      a. Elevated somatostatin
   6. Follow up of asymptomatic individual with documented islet cell tumor [One of the following]
      a. Every 3-12 months after resection every 6-12 months
      b. Every 6-12 months thereafter
   7. New or worsening clinical data reported [One of the following]
      a. Anorexia
      b. Weight loss
      c. Abdominal or pelvic pain
      d. Abdominal or pelvic mass
      e. Hepatomegaly
      f. Ascites
      g. Bowel obstruction by KUB
      h. New onset of hydronephrosis documented on ultrasound
      i. Lab values elevated/increasing [One of the following]
         i. Rising CEA (> 2.5 in non smoker and > 5.0 in smoker)
         ii. Rising bilirubin (Total bilirubin > 1.9mg/dL)
         iii. Alkaline phosphatase > 140IU/L
         iv. Rising CA 19-9 > 35 U/mL
         v. New onset of BUN > 20mg/dL
         vi. New onset of creatinine > 1.5mg/dL
C. Pheochromocytoma – see CT of the abdomen and pelvis
D. Poorly differentiated or high grade or anaplastic small cell carcinoma other than lung – see CT of the abdomen and pelvis
XXIII. Evaluation of cirrhosis and portal hypertension [One of the following]91,92
   A. Hepatitis B or C
      1. Ultrasound demonstrating a liver mass > 1 cm
   B. Cirrhosis
      1. Planned TIPS (transjugular intrahepatic portosystemic shunt – relatively non-invasive procedure for portal hypertension)

XXIV. Screening for hepatoma or hepatocellular carcinoma with hepatitis B60,93-98
   [One of the following]
   A. Cirrhosis with histologic diagnosis [One of the following]
      1. Alcoholic cirrhosis
      2. Hemochromatosis
      3. Fatty liver
      4. Biliary cirrhosis stage 4
      5. Hepatitis B or C
   B. Prior ultrasound showed a mass [One of the following]
      1. No CT or MRI performed after the ultrasound
      2. CT or MRI showed a lesion under 1 cm repeat CT every 3-6 months if stable
      3. CT or MRI showed mass between 1-2 cm repeat CT in 3 months if no biopsy performed
   C. Negative ultrasound with elevated or rising AFP repeat CT or MRI of the liver every 3 months

XXV. Non-small cell lung cancer [One of the following]26,45,57
   A. Initial staging may be approved along with PET/CT for initial staging
   B. Rising CEA (non smoker > 2.5; smoker > 5.0)
   C. Rising liver function tests [One of the following]
      1. Bilirubin >1.9 mg/dL
      2. Alkaline phosphatase > 140 IU/L
   D. New or worsening signs or symptoms or clinical data [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Bowel obstruction by KUB
      8. Hematuria
      9. New onset of hydronephrosis documented on ultrasound
   E. Surveillance with no clinical or radiographic evidence of disease [One of the following]
      1. Every 6-12 months for 2 years
      2. Annually after 2 years

XXVI. Small-cell lung cancer [One of the following]58
   A. Initial staging may be approved along with PET/CT for initial staging
   B. Rising CEA (non smoker > 2.5; smoker > 5.0)
   C. Rising liver function tests
   D. Surveillance with no clinical or radiographic evidence of disease [One of the following]
1. Every 3-4 months for 2 years
2. Every 6 months for years 3-5
3. Annually after 5 years
E. Change on recent chest x-ray
F. New or worsening signs or symptoms or clinical data [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. Hematuria
   9. New onset of hydronephrosis documented on ultrasound

XXVII. Follow up of renal abscess

XXVIII. Pyelonephritis in a complicated individual not responding to treatment [One of the following]
   1. Diabetes
   2. Immunocompromised
   3. History or renal stones
   4. Prior renal surgery

XXIX. Abscess [In some cases, CT of the abdomen and pelvis may be the appropriate study.]

XXX. Suspected abdominal wall hernia [One of the following]
   1. Abdominal pain or discomfort [One of the following]
      1. Worsened by straining or lifting
      2. Worsened by prolonged standing
   2. Visible or palpable mass [One of the following]
      1. More prominent in upright position
      2. More prominent with Valsalva maneuver
   3. Strangulation [One of the following]
      1. Colicky pain abdominal pain
      2. Palpable mass
      3. Signs of intestinal obstruction
   4. After abdominal surgery with incisional pain associated with bulge or suspected defect

XXXI. Suspected or known dissection of the aorta [CTA of the abdomen and pelvis is the appropriate study.]

XXXII. Crohn’s disease and inflammatory bowel disease (CT of the abdomen and pelvis is the appropriate study.)
XXXIII. Appendicitis\textsuperscript{6,7} (In children and pregnant women, ultrasound is preferred as the initial study. CT of the abdomen and pelvis is the appropriate study if CT is preferred.)

XXXIV. Diverticulitis, suspected or known in a patient with lower abdominal pain and/or mass\textsuperscript{4,5} (CT of the abdomen and pelvis is the appropriate study.)

XXXV. Kidney or renal stones\textsuperscript{2} (CT of the abdomen and pelvis is the appropriate study.)

XXXVI. Abdominal distention on physical examination (CT of the abdomen and pelvis is the appropriate study.)

XXXVII. Evaluation of elevated liver function tests [One of the following]\textsuperscript{103,104}
   A. Ultrasound not diagnostic [One of the following]
      1. Direct bilirubin > .2
      2. Total bilirubin > 1.9
      3. Alkaline phosphatase > 147IU/L
      4. Gamma GT or GET > 51 IU/L
      5. AST > 40 IU/L
      6. ALT > 56 IU/L

XXXVIII. Soft tissue mass of the abdominal wall\textsuperscript{105}
   A. Abdominal x-ray non-diagnostic

XXXIX. Unilateral leg edema\textsuperscript{106} (CT of the abdomen and pelvis is the appropriate study.)

XL. Renal cell carcinoma or kidney cancer\textsuperscript{29-31,59} (CT of the abdomen and pelvis is the appropriate study.)

XLI. Breast cancer\textsuperscript{48} (CT of the abdomen and pelvis is the appropriate study.)

XLII. Cervical cancer\textsuperscript{50} (CT of the abdomen and pelvis is the appropriate study.)

XLIII. Colon cancer\textsuperscript{25,51} (CT of the abdomen and pelvis is the appropriate study.)

XLIV. Rectal cancer\textsuperscript{52} (CT of the abdomen and pelvis is the appropriate study.)

XLV. Ovarian cancer, fallopian tube cancer and primary peritoneal cancer\textsuperscript{39,53} (CT of the abdomen and pelvis is the appropriate study.)

XLVI. Esophageal cancer\textsuperscript{54} [One of the following]
   A. Initial staging
   B. Prior to chemoradiation if PET/CT not done
C. Clinical recurrence
D. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. Rectal bleeding
   9. Vaginal bleeding
   10. Hematuria
   11. New onset of hydronephrosis documented on ultrasound
   12. Lab values elevated/increasing [One of the following]
      a. Rising liver function tests
      b. Rising bilirubin (Total bilirubin > 1.9mg/dL)
      c. New onset of BUN > 20mg/dL
      d. New onset of creatinine > 1.5mg/dL

XLVII. Gastric (stomach) cancer \textsuperscript{55} [One of the following]
   A. Initial staging
   B. Following completion of treatment
   C. Clinical recurrence
   D. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Bowel obstruction by KUB
      8. Rectal bleeding
      9. Vaginal bleeding
      10. Hematuria
      11. New onset of hydronephrosis documented on ultrasound
      12. Lab values elevated/increasing [One of the following]
         a. Rising liver function tests
         b. Rising bilirubin (Total bilirubin > 1.9mg/dL)
         c. New onset of BUN > 20mg/dL
         d. New onset of creatinine > 1.5mg/dL

XLVIII. Carcinoid \textsuperscript{56} [One of the following]
   A. Initial staging
   B. Surveillance
      1. Carcinoid tumors larger than 2 cm or with incomplete resection and are stable with no evidence of disease (CT of the abdomen and pelvis is preferred)
2. Every 3-12 months after resection
3. Every 6-12 months thereafter
C. Abnormal laboratory tests or complaints suggesting recurrence [One of the following]
   1. Elevated urine 5HIAA > 15mg/24hr
   2. Elevated chromogranin A (CgA) > 39ng/L
   3. Elevated substance P > 270 ng/L or pg/mL
   4. Elevated gastrin > 100pg/mL
   5. Elevated serotonin > 330mcmol/L
   6. New onset of flushing
   7. New onset of diarrhea

XLIX. Islet cell tumor of the pancreas [One of the following]\textsuperscript{56}
   A. Initial staging
   B. Surveillance with no evidence of disease [One of the following]
      1. Every 3-12 months after resection
      2. Every 6-12 months thereafter
   C. Clinical evidence of recurrence [One of the following]
      1. Elevated serum gastrin > 100 pg/mL
      2. Elevated serum glucagon > 100 pg/mL
      3. Elevated serum insulin > 72 ng/mL
      4. Elevated vasoactive intestinal polypeptide (VIP) > 75pg/ml
      5. Elevated somatostatin

L. Poorly differentiated or high-grade or anaplastic small cell carcinoma other than lung\textsuperscript{58} [One of the following]
   A. Initial staging
   B. Surveillance following treatment of resectable disease [One of the following]
      1. Every 3 months for a year
      2. Every 6 months after 1 year
   C. Surveillance following treatment of unresectable or metastatic disease
      1. Every 3 months
   D. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Bowel obstruction by KUB
      8. Rectal bleeding
      9. Vaginal bleeding
      10. Hematuria
      11. New onset of hydronephrosis documented on ultrasound
      12. Lab values elevated/increasing [One of the following]
         a. Rising liver function tests
         b. Rising bilirubin (Total bilirubin > 1.9mg/dL)
c. BUN >20mg/dL
d. Creatinine >1.5mg/dL

LI. **Hepatoma or hepatocellular carcinoma**[^33][^60] [One of the following]
   A. Initial staging
   B. Following treatment every 3-6 months for 2 years
   C. After 2 years every 6-12 months
   D. New onset of rising AFP
   E. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Bowel obstruction by KUB
      8. New onset of renal insufficiency
      9. New onset of hydronephrosis documented on ultrasound
      10. Lab values elevated/increasing [One of the following]
          a. Rising liver function tests
          b. Rising bilirubin (Total bilirubin > 1.9mg/dL)

LII. **Gallbladder cancer**[^60] [One of the following]
   A. Postoperative scan to establish a new baseline
   B. Repeat CT scan every 6 months for 2 years
   C. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Bowel obstruction by KUB
      8. Lab values elevated/increasing [One of the following]
          a. Rising bilirubin (Total bilirubin > 1.9mg/dL)
          b. Alkaline phosphatase > 140IU/L

LIII. **Cholangiocarcinoma**[^60] [One of the following]
   A. Initial staging
   B. Completion of therapy then every 6 months for 2 years
   C. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly

[^33]: Reference 33
[^60]: Reference 60
6. Ascites
7. Bowel obstruction by KUB
8. Lab values elevated/increasing [One of the following]
   a. Rising bilirubin (Total bilirubin > 1.9mg/dL)
   b. Alkaline phosphatase > 140IU/L

LIV. **Hodgkin’s lymphoma**[^32][^61] (CT of the abdomen and pelvis is the appropriate study.)

LV. **Non-Hodgkin’s lymphoma**[^34][^35][^62] (Follicular lymphoma, marginal zone lymphoma, MALT lymphoma, mantle cell lymphoma, diffuse large B-cell lymphoma, Burkitt’s lymphoma, peripheral T-cell lymphoma, mycosis fungoides, hairy cell leukemia, post-transplant lymphoproliferative disorders, CLL/SLL) (CT of the abdomen and pelvis is the appropriate study.)

LVI. **Soft tissue sarcoma**[^36][^63] [One of the following]
   A. Myxoid/round cell liposarcoma (CT of the abdomen and pelvis is preferred for initial staging.)
   B. Retroperitoneal/intra-abdominal (includes GIST, desmoid, aggressive fibromatosis and other sarcomas) (CT of the abdomen and pelvis is preferred for initial staging.)
      1. Initial staging
      2. Follow up [One of the following]
         a. Every 3-6 months for 2-3 years (for GIST tumor every 3-6 months for 3-5 years)
         b. Every 6 months for next 2 years
         c. Annually after 4-5 years

LVII. **Testicular cancer**[^64] (CT of the abdomen and pelvis is the appropriate study.)

LVIII. **Anal cancer**[^46] (CT of the abdomen and pelvis is the appropriate study.)

LIX. **Bladder cancer**[^47] (CT of the abdomen and pelvis is the appropriate study.)

LX. **New bone lesion suspicious for a metastatic lesion with no known cancer**[^107] (CT of the abdomen and pelvis is the appropriate study.)

LXI. **Malignant mesothelioma**[^108] (CT of the abdomen and pelvis is the appropriate study.)
   A. Initial staging
References:


67. AGA Institute technical review on acute pancreatitis, Gastroenterology, 2007; 132:20022-2044.
Note: For radiation therapy planning, use 77014.
For CT guided needle placement, biopsy, or drainage, use 77012.
For CT guided tissue ablation, use 77013.

I. Abdominal or pelvic pain (CT of the abdomen and pelvis is preferred.)

II. Jaundice or abnormal liver function tests with normal US

III. Suspected renal or kidney tumor (CTA of the abdomen is preferred.)

IV. Follow up of metastases (CT of the abdomen and pelvis is preferred.)

V. Trauma (CT of the abdomen and pelvis is preferred.)

VI. Renal stones (CT of the abdomen and pelvis is preferred.)

VII. Known or acute suspected pancreatitis or pancreatic pseudocyst [One of the following] 4-6
   A. Suspected acute pancreatitis with abdominal pain (Exams may be repeated at intervals if there is no improvement on therapy, or signs of complications are present.) [One of the following]
      1. Amylase > 3 times the upper normal laboratory value
      2. Lipase > 3 times the upper normal laboratory value
   B. Known pancreatitis with any of the following allows for repeat exams if present [One of the following]
      1. Hemodynamic instability
         a. Falling hematocrit
         b. Falling blood pressure
      2. Aural temperature > 38.3°C or > 100.9°F
      3. Retroperitoneal air on prior CT
      4. Positive blood culture
      5. Signs of peritonitis (rebound, guarding or tenderness)
      6. Poor oxygen saturation, signs of ARDS (adult respiratory distress syndrome)
      7. Signs of renal failure rising BUN and creatinine
      8. Initial clinical state unimproved after 5 days of therapy
   C. Suspected pancreatic pseudocyst [Both of the following]
      1. History [One of the following]
a. Acute pancreatitis with onset at least 4 wks earlier
b. Pancreatitis secondary to trauma (time irrelevant)
c. Chronic pancreatitis

2. Clinical findings [One of the following]
   a. Abdominal/back pain
   b. Abdominal tenderness
   c. Abdominal mass

D. Evaluation of known pancreatic pseudocyst [One of the following]
   1. Periodic evaluation for change in size
   2. New or worsening clinical findings such as recurrent abdominal pain, rising amylase or lipase, fever

E. Pancreatic mass on prior imaging

VIII. Pancreatic pseudocyst

IX. Splenomegaly

X. Ascites (CT of the abdomen and pelvis is preferred.)

XI. Staging of known tumors including suspected metastases (CT of the abdomen and pelvis is preferred.)

XII. History of malignancy including follow-up or suspicion of metastatic disease (CT of the abdomen and pelvis is preferred.)

XIII. Response to chemotherapy or radiation therapy (CT of the abdomen and pelvis is preferred.)

XIV. Evaluation of lymphoma (CT of the abdomen and pelvis is preferred.)

XV. Evaluation of lymphadenopathy (CT of the abdomen and pelvis is preferred.)

XVI. Evaluation of abdominal mass (CT of the abdomen and pelvis is preferred.)

XVII. Known or suspected primary malignancy

XVIII. Follow-up to surgery (CT of the abdomen and pelvis is preferred.)

XIX. Evaluation of known or suspected abdominal or pelvic mass

XX. Evaluation of known or suspected abdominal or pelvic inflammatory processes

XXI. Evaluation of known or suspected abdominal or pelvic fluid collection (CT of the abdomen and pelvis is preferred.)
XXII. Bowel obstruction (CT of the abdomen and pelvis is preferred.)

XXIII. Hematuria (CT of the abdomen and pelvis is preferred.)

XXIV. Abdominal aortic aneurysm (CT of the abdomen and pelvis is preferred.)

XXV. Aortic dissection (CT of the abdomen and pelvis is preferred.)

XXVI. Clarification of findings from other imaging studies or abnormal laboratory findings

XXVII. Evaluation of known or suspected abdominal or pelvic vascular structures

XXVIII. Evaluation of known or suspected congenital abnormalities of the abdomen or pelvis

XXIX. Treatment planning for radiation therapy – CPT code 77014 is the correct code for this indication.

XXX. Pancreatic cancer or mass7 [One of the following] (Following initial diagnosis, CT of the abdomen and pelvis is the appropriate study.)

A. Symptoms [One of the following]
   1. Weight loss (See XIX below.)
   2. Mid-epigastric pain radiating to the back

B. Elevated tumor markers [One of the following]
   1. CA19-9 >40 IU/L
   2. CEA > 2.5 (non-smoker) or >5.0 in a smoker

C. Prior imaging with dilatation of the bile duct and/or pancreatic duct (US, ERCP, MRCP)

D. Pancreatic mass on recent prior imaging for “pancreatic protocol”

E. Initial staging of pancreatic cancer if not already performed

F. Painless jaundice

G. Follow up [One of the following]
   1. Immediately following surgery
   2. Following completion of chemotherapy
   3. Every 3-6 months for 2 years
   4. After 2 years annually

H. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. New onset of hydronephrosis documented on ultrasound
9. Lab values elevated/increasing
   a. Rising CEA (>2.5 in non smoker or >5.0 in smoker)
   b. Rising bilirubin (total bilirubin >1.9mg/dL)
   c. Alkaline phosphatase >140U/L
   d. Rising CA 19-9 >35 U/mL
   e. New onset of BUN >20mg/dL

XXXI. Known or suspected adrenal disease or mass including adrenal carcinoma
[One of the following]

Note: With suspected pheochromocytoma, if meets criteria, can also approve CT pelvis as an uncommon presentation of pheochromocytoma is extra-adrenal, including the bladder.

A. Suspected pheochromocytoma or paraganglioma [One of the following]
   1. VMA or metanephrine > 7mg/24hr
   2. Catecholamine >normal

B. Suspected adrenal cortical tumor [One of the following]
   1. 24 hr urine free cortisol >100mcg/24hr
   2. No suppression by dexamethasone

C. Suspected aldosteronoma [One of the following]
   1. Hypertension with systolic >160 and diastolic > 100
   2. Hypertension that is drug resistant
   3. Spontaneous or diuretic-induced hypokalemia
   4. Serum potassium <3.5mEq/L on 2 different samples
   5. Plasma aldosterone to rennin ratio > 20

D. Incidental finding with no history of malignancy 1-4 cm in size [One of the following]
   1. No prior non contrast CT performed
   2. Follow up 12 months from the original non contrast CT

E. Incidental finding on with no history of malignancy > 4 cm in size

F. Personal history of malignancy

G. Suspicion of adrenal carcinoma (non functioning tumors > 4 cm in size) [One of the following]
   1. Non functioning adrenal mass > 4 cm in size on prior US
   2. Cushing’s syndrome
   3. Hirsutism in women
   4. Oligomenorrhea
   5. Virilization in women
   6. Gynecomastia
   7. Testicular atrophy
   8. Elevated DHEA-S
   9. Hypertension
   10. Hypokalemia- serum potassium <3.5mEq/L
   11. Fever
   12. Weight loss
   13. Abdominal pain and tenderness
   14. Palpable abdominal mass

H. Follow up of treated adrenal carcinoma [One of the following]
   1. Every 3-6 months
XXXII. Suspected or known neuroendocrine tumor including carcinoid, pheochromocytoma, paraganglioma, islet cell tumor of the pancreas, poorly differentiated or high grade or aggressive small cell tumor other than lung [One of the following][8] (For carcinoid, pheochromocytoma, paraganglioma and poorly differentiated or high grade or anaplastic small cell carcinoma other than lung, see CT of the abdomen and pelvis, CPT codes 74176, 74177 and 74178.)

A. Carcinoid – See CT of the abdomen and pelvis.

B. Islet cell tumor of the pancreas [One of the following]
   1. Gastrinoma or Zollinger-Ellison syndrome [One of the following]
      a. Elevated serum gastrin >100pg/m
      b. Positive secretin test
      c. May also present with reflux and peptic ulcers
      d. Prominent gastric folds on endoscopy
   2. Insulinoma
      a. Elevated serum insulin >2.0ng/ml
   3. Glucagonoma
      a. Elevated serum glucagon>100pg/ml
   4. VIPoma
      a. Elevated vasoactive intestinal polypeptide (VIP) >75pg/ml
   5. Somatostatinoma
      a. Elevated somatostatin
   6. Follow up of asymptomatic individual with documented islet cell tumor [One of the following]
      a. Every 3-12 months after resection every 6-12 months
      b. Every 6-12 months thereafter
   7. New or worsening clinical data reported [One of the following]
      a. Anorexia
      b. Weight loss
      c. Abdominal or pelvic pain
      d. Abdominal or pelvic mass
      e. Hepatomegaly
      f. Ascites
      g. Bowel obstruction by KUB
      h. New onset of hydronephrosis documented on ultrasound
         i. Lab values elevated/increasing [One of the following]
            i. Rising CEA (>2.5 in non smoker and >5.0 in smoker)
            ii. Rising bilirubin (Total bilirubin >1.9mg/dL)
            iii. Alkaline phosphatase > 140IU/L
            iv. Rising CA 19-9 >35 U/mL
            v. New onset of BUN >20mg/dL
            vi. New onset of creatinine > 1.5mg/dL

C. Pheochromocytoma – See CT of the abdomen and pelvis.

D. Poorly differentiated or high grade or anaplastic small cell carcinoma other than lung – See CT of the abdomen and pelvis.
XXXIII. Screening for hepatoma or hepatocellular carcinoma with hepatitis B \[One of the following\]
A. Cirrhosis with histologic diagnosis \[One of the following\]
   1. Alcoholic cirrhosis
   2. Hemochromatosis
   3. Fatty liver
   4. Biliary cirrhosis stage 4
   5. Hepatitis B or C
B. Prior ultrasound showed a mass \[One of the following\]
   1. CT showed a lesion under 1 cm – Repeat CT every 3-6 months if stable.
   2. CT shows mass between 1-2 cm – Repeat CT in 3 months if no biopsy performed.
   3. Negative ultrasound with elevated or rising AFP – Repeat CT or MRI of the liver every 3 months.

XXXIV. Non-small cell lung cancer \[One of the following\]
A. Initial staging may be approved along with PET/CT for initial staging
B. Rising CEA (non smoker >2.5; smoker >5.0)
C. Rising liver function tests \[One of the following\]
   1. Bilirubin >1.9 mg/dL
   2. Alkaline phosphatase > 140 IU/L
D. New or worsening signs or symptoms or clinical data \[One of the following\]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. Hematuria
   9. New onset of hydronephrosis documented on ultrasound
E. Surveillance with no clinical or radiographic evidence of disease \[One of the following\]
   1. Every 6-12 months for 2 years
   2. Annually after 2 years

XXXV. Small-cell lung cancer \[One of the following\]
A. Initial staging may be approved along with PET/CT for initial staging
B. Rising CEA (non smoker >2.5; smoker >5.0)
C. Rising liver function tests
D. Surveillance with no clinical or radiographic evidence of disease \[One of the following\]
   1. Every 3-4 months for 2 years
   2. Every 6 months for years 3-5
   3. Annually after 5 years
E. Change on recent chest x-ray
F. New or worsening signs or symptoms or clinical data \[One of the following\]
   1. Anorexia
   2. Weight loss
3. Abdominal or pelvic pain
4. Abdominal or pelvic mass
5. Hepatomegaly
6. Ascites
7. Bowel obstruction by KUB
8. Hematuria
9. New onset of hydronephrosis documented on ultrasound

XXXVI. Esophageal cancer\textsuperscript{12} [One of the following]
A. Initial staging
B. Prior to chemoradiation if PET/CT not done
C. Clinical recurrence
D. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. Rectal bleeding
   9. Vaginal bleeding
   10. Hematuria
   11. New onset of hydronephrosis documented on ultrasound
   12. Lab values elevated/increasing [One of the following]
      a. Rising liver function tests
      b. Rising bilirubin (total bilirubin >1.9mg/dL)
      c. New onset of BUN >20mg/dL
      d. New onset of creatinine >1.5mg/dL

XXXVII. Gastric (stomach) cancer\textsuperscript{13} [One of the following]
A. Initial staging
B. Following completion of treatment
C. Clinical recurrence
D. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. Rectal bleeding
   9. Vaginal bleeding
   10. Hematuria
   11. New onset of hydronephrosis documented on ultrasound
12. Lab values elevated/increasing [One of the following]
   a. Rising liver function tests
   b. Rising bilirubin (Total bilirubin >1.9mg/dL)
   c. New onset of BUN >20mg/dL
   d. New onset of creatinine >1.5mg/dL

XXXVIII. Carcinoid [One of the following]
   A. Initial staging
   B. Surveillance
      1. Carcinoid tumors larger than 2 cm or with incomplete resection and are stable with no
         evidence of disease (CT of the abdomen and pelvis is preferred.)
      2. Every 3-12 months after resection
      3. Every 6-12 months thereafter
   C. Abnormal laboratory tests or complaints suggesting recurrence [One of the following]
      1. Elevated urine 5HIAA >15mg/24hr
      2. Elevated chromogranin A (CgA) >39ng/L
      3. Elevated substance P >270 ng/L or pg/mL
      4. Elevated gastrin >100pg/mL
      5. Elevated serotonin >330mcmol/L
      6. New onset of flushing
      7. New onset of diarrhea

XXXIX. Islet cell tumor of the pancreas [One of the following]
   A. Initial staging
   B. Surveillance with no evidence of disease [One of the following]
      1. Every 3-12 months after resection
      2. Every 6-12 months thereafter
   C. Clinical evidence of recurrence [One of the following]
      1. Elevated serum gastrin >100 pg/mL
      2. Elevated serum glucagon >100 pg/mL
      3. Elevated serum insulin > 72 ng/mL
      4. Elevated vasoactive intestinal polypeptide (VIP) >75pg/ml
      5. Elevated somatostatin

XL. Poorly differentiated or high-grade or anaplastic small cell carcinoma other than lung [One of the following]
   A. Initial staging
   B. Surveillance following treatment of resectable disease [One of the following]
      1. Every 3 months for a year
      2. Every 6 months after 1 year
   C. Surveillance following treatment of unresectable or metastatic disease
      1. Every 3 months
   D. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
4. Abdominal or pelvic mass
5. Hepatomegaly
6. Ascites
7. Bowel obstruction by KUB
8. Rectal bleeding
9. Vaginal bleeding
10. Hematuria
11. New onset of hydronephrosis documented on ultrasound
12. Lab values elevated/increasing [One of the following]
   a. Rising liver function tests
   b. Rising bilirubin (total bilirubin >1.9mg/dL)
   c. BUN >20mg/dL
   d. Creatinine >1.5mg/dL

XL I. **Hepatoma or hepatocellular carcinoma** [One of the following]
   A. Initial staging
   B. Following treatment every 3-6 months for 2 years
   C. After 2 years every 6-12 months
   D. New onset of rising AFP
   E. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Bowel obstruction by KUB
      8. New onset of renal insufficiency
      9. New onset of hydronephrosis documented on ultrasound
     10. Lab values elevated/increasing [One of the following]
        a. Rising liver function tests
        b. Rising bilirubin (total bilirubin >1.9mg/dL)

XL II. **Gallbladder cancer** [One of the following]
   A. Postoperative scan to establish a new baseline
   B. Repeat CT scan every 6 months for 2 years
   C. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Bowel obstruction by KUB
     8. Lab values elevated/increasing [One of the following]
        a. Rising bilirubin (total bilirubin >1.9mg/dL)
        b. Alkaline phosphatase > 140IU/L
XLIII. Cholangiocarcinoma

- Initial staging
- Completion of therapy then every 6 months for 2 years
- New or worsening clinical data reported
  - Anorexia
  - Weight loss
  - Abdominal or pelvic pain
  - Abdominal or pelvic mass
  - Hepatomegaly
  - Ascites
  - Bowel obstruction by KUB
  - Lab values elevated/increasing
    - Rising bilirubin (total bilirubin > 1.9 mg/dL)
    - Alkaline phosphatase > 140 IU/L
References:

1. Local Coverage Determination (LCD) for Radiology: Computed Tomography of the Abdomen and Pelvis (L30048), Cahaba Government Benefit Administrators, LLC, Alabama. [Link](http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&PolicyType=Final&s=2&CntrctrType=1%7c9&KeyWord=74150&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=74150&kq=true&bc=IAAAAAAAAAAA&).

2. Local Coverage Determination (LCD) for Radiology: Computed Tomography of the Abdomen and Pelvis (L30048), Cahaba Government Benefit Administrators, LLC, Georgia. [Link](http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&PolicyType=Final&s=14&CntrctrType=1%7c9&KeyWord=74150&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=74150&kq=true&bc=IAAAAAAAAAAA&).

3. Local Coverage Determination (LCD) for Radiology: Computed Tomography of the Abdomen and Pelvis (L30048), Cahaba Government Benefit Administrators, LLC, Tennessee. [Link](http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&PolicyType=Final&s=50&CntrctrType=1%7c9&KeyWord=74150&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=74150&kq=true&bc=IAAAAAAAAAAA&).

4. AGA Institute technical review on acute pancreatitis, Gastroenterology, 2007; 132:20022-2044.


CTA of the Abdomen and Pelvis with Contrast Material(s), Including Noncontrast Images, If Performed, and Image Postprocessing

Note: For evaluation of PVD, the appropriate CPT code is 75635 (CTA abdominal aorta with runoff) rather than either CTA abdomen or CTA pelvis.

I. Renovascular hypertension, suspected renal artery stenosis\textsuperscript{1-7} [One of the following]
   A. Severe hypertension (>110 diastolic) with [One of the following]
      1. Progressive renal insufficiency (MRA is preferred.)
      2. Refractoriness to aggressive medical therapy
   B. Malignant or accelerated hypertension
   C. Acute worsening of previously stable hypertension
   D. Hypertension (> 100) in adult <35 years old
   E. New onset significant hypertension (>110 diastolic) after age 50
   F. Hypertension in a patient with: [One of the following]
      1. Diffuse atherosclerosis or
      2. Incidentally detected asymmetry of kidney size
   G. Hypertension with an acute elevation in plasma creatinine concentration unexplained or after therapy with an ACE inhibitor
   H. Abdominal bruit
   I. Recurring acute pulmonary edema with significant hypertension
   J. Hypokalemia (<3.5 mmol/L) with normal or elevated plasma renin (>1 ng/ml/Hr) levels in the absence of diuretic therapy
   K. Children with hypertension (MRA is preferred.)
   L. Hypertension and documented neurofibromatosis

II. Intestinal angina (or chronic mesenteric ischemia) [One of the following]\textsuperscript{1,2,8-12}
   A. Recurrent acute episodes of abdominal pain [All]
      1. Postprandial epigastric pain, occasionally radiates to the back
      2. Weight loss
      3. Fear of eating

III. Acute mesenteric ischemia with abdominal pain and bleeding\textsuperscript{11,12}

IV. Evaluation of renal or liver transplant donor\textsuperscript{1,13,14}

V. Aortic aneurysm or aneurysm of the pelvic arteries (including mycotic aneurysm)\textsuperscript{1,15-23} [One of the following]
   A. Suspected rupture of AAA [All]
      1. New onset of mid-abdominal or back pain
2. Clinical findings [One of the following]
   a. Pulsatile or expansile mass
   b. Abnormal X-ray or US findings suggesting aortic aneurysm
   c. Falling blood pressure

B. Known AAA [One of the following]
   1. Periodic follow-up of an asymptomatic known AAA will be according to the following schedule if there is an inadequate ultrasound and there has not been a surgical repair. [One of the following]
      a. 2.5 - 2.9 cm every 5 years
      b. 3.0 - 3.4 cm every 3 years
      c. 3.5 - 3.9 cm every 2 years
      d. 4.0 - 4.4 cm every year
      e. 4.5 - 4.9 cm every 6 months
      f. 5.0 - 5.5 cm every 3-6 months
   2. New onset of pain

C. Postoperative evaluation following endovascular repair (stent graft) [One of the following]
   1. 1 month after repair
   2. 3 months after repair
   3. 6 months after repair
   4. Annually after repair
   5. Suspicion of endoleak

D. Aneurysm of any other intraabdominal artery detected on other imaging

E. Vascular insufficiency of the bowel (suspicion of) [1 and 2]
   1. Abdominal pain often starting as periumbilical and often out of proportion to exam findings
   2. Other clinical findings [One of the following]
      a. Leukocytosis, WBC > 11,500/cu.mm
      b. Stool positive for occult blood
      c. Nausea, vomiting or diarrhea
      d. History of abdominal angina (pain after eating for approximately 3 hours)

F. Planning for endovascular repair

G. Screening for aneurysm (Ultrasound screening is the appropriate study. CTA should only be used if the aorta cannot be visualized adequately on US and this must be documented with the US report.) [One of the following]
   1. Pulsatile mass with non diagnostic ultrasound
   2. History of first degree relative with an abdominal aortic aneurysm and non interpretable ultrasound
   3. Male age 65-75 with a history of smoking

H. Pulsatile mass on abdominal, vaginal or rectal examination

VI. Peripheral arterial vascular disease\textsuperscript{1,24-26}
Note: For evaluation of PVD, unlike with MRA studies, the appropriate CPT code is 75635 (CTA abdominal aorta with runoff) rather than either CTA abdomen or CTA pelvis or CTA of the extremities).

VII. Suspected dissection of the aorta [One of the following]\textsuperscript{1,15,27-28}
A. Unequal blood pressure in the arms
B. Rapid onset of “ripping, tearing, searing, or sharp” severe chest or upper back or abdominal pain
C. Syncope and chest pain
D. Shortness of breath
E. CVA or stroke
F. Loss of pulses
G. Aortic insufficiency murmur
H. Marfan’s syndrome
I. Known aortic valve disease
J. Follow up of known dissection [One of the following]
   1. 1 month after repair
   2. 3 months after repair
   3. 6 months after repair
   4. 12 months after repair
   5. Annually after 12 months
K. New symptoms after repair [One of the following]
   1. Unequal blood pressure in the arms
   2. Rapid onset of “ripping, tearing, searing, or sharp” severe chest or upper back or abdominal pain
   3. Syncope and chest pain
   4. Shortness of breath
   5. CVA or stroke
   6. Loss of pulses
   7. Aortic insufficiency murmur

VIII. Evaluation of the hepatic arteries and veins (including portal vein) [One of the following]1,29-31
A. Evaluation of portal and hepatic veins prior to or following TIPS (transjugular intrahepatic portosystemic shunt)
B. Evaluation of portal and hepatic veins prior to or following surgical intervention for portal hypertension
C. Evaluation of hepatic vasculature prior to and following embolization procedure
D. Evaluation of hepatic vasculature prior to planned hepatectomy
E. Evaluation of liver donor
F. Suspected hepatic vein thrombosis or Budd Chiari syndrome [One of the following]
   1. Ascites
   2. Hepatomegaly
   3. Inadequate Doppler ultrasound of hepatic veins
G. Possible portal vein thrombosis with negative or inadequate Doppler study of the portal vein [One of the following]
   1. Hypercoagulable state
   2. Abdominal malignancy
H. Preoperative evaluation for pancreatic cancer

IX. Evaluation of abdominal veins other than hepatic and portal veins [One of the following]1
A. Nephrotic syndrome  
B. Suspicion of iliac vein thrombus  
C. Suspicion of inferior vena cava thrombus  
D. Renal vein thrombosis (see XII)  
E. Mesenteric vein thrombosis  

X. Vasculitis and collagen vascular disease\(^1,32\) [One of the following]  
A. History of collagen vascular disease  
B. Blue toe syndrome  
C. Claudication  
D. Non healing vascular ulcers of the lower extremity  
E. History of suspicion of polyarteritis nodosa  
F. Known or suspected Takayasu’s arteritis  
G. Henoch-Schönlein purpura  

XI. Pancreatic cancer – preoperative evaluation of abdominal vessels\(^1\)  
A. Must have histologically proven diagnosis  

XII. Suspected renal vein thrombosis\(^1\) (Ultrasound is the preferred initial imaging.) [One of the following]  
A. Nephrotic syndrome  
B. Proteinuria – 3 grams or more in 24 hours  
C. Lupus nephritis  
D. Hypercoagulable state [One of the following]  
1. Antiphospholipid antibodies  
2. Behcet’s syndrome  
3. Protein C deficiency  
4. Protein S deficiency  
5. Factor V Leiden deficiency  
6. Lupus anticoagulant  
7. Hyperactive platelet syndrome  
8. MRHFR  
9. Anti-cardiolipin antibodies  
10. Elevated homocysteine level  
11. Anti B2 glycoprotein antibodies  
12. Elevated fibrinogen  
13. PTT abnormal  
14. Antithrombin III antibodies  
15. Oral contraceptive use  
16. Hormone replacement  
17. Sickle cell anemia  

XIII. Suspected pelvic AVM\(^1,33\) [One of the following]  
A. Pulsatile pelvic mass  
B. Incidental finding on prior imaging including ultrasound  
C. Pelvic pain
References:

Note: For evaluation of PVD, the appropriate CPT code is 75635 (CTA abdominal aorta with runoff) rather than either CTA abdomen or CTA pelvis.

I. Renovascular hypertension, suspected renal artery stenosis\(^1\text{-7}\) [One of the following]
   A. Severe hypertension (>110 diastolic) with [One of the following]
      1. Progressive renal insufficiency (MRA is preferred.)
      2. Refractoriness to aggressive medical therapy
   B. Malignant or accelerated hypertension
   C. Acute worsening of previously stable hypertension
   D. Hypertension (>100) in adult <35 years old
   E. New onset significant hypertension (>110 diastolic) after age 50
   F. Hypertension in a patient with:
      1. Diffuse atherosclerosis or
      2. Incidentally detected asymmetry of kidney size
   G. Hypertension with an acute elevation in plasma creatinine concentration unexplained or after therapy with an ACE inhibitor
   H. Abdominal bruit
   I. Recurring acute pulmonary edema with significant hypertension)
   J. Hypokalemia (<3.5 mmol/L) with normal or elevated plasma renin (>1 ng/ml/Hr) levels in the absence of diuretic therapy
   K. Children with hypertension (MRA is preferred.)
   L. Hypertension and documented neurofibromatosis

II. Intestinal angina (mesenteric ischemia) (CTA of the abdomen and pelvis, 74174, is the appropriate code.)\(^1,8\text{-12}\)

III. Acute mesenteric ischemia with abdominal pain and bleeding (CTA of the abdomen and pelvis, 74174, is the appropriate code.)\(^11,12\)

IV. Evaluation of renal or liver transplant donor\(^1,13,14\)

V. Aortic aneurysm (including mycotic aneurysm) (CTA of the abdomen and pelvis, 74174, is the appropriate code.)\(^1,15\text{-23}\)

VI. Peripheral arterial vascular disease\(^1,24\text{-26}\)
Note: For evaluation of PVD, unlike with MRA studies, the appropriate CPT code is 75635 (CTA abdominal aorta with runoff) rather than either CTA abdomen or CTA pelvis or CTA of the extremities).
VII. Suspected dissection of the aorta (CTA of the abdomen and pelvis, 74174, is the appropriate code.)\textsuperscript{1,15,27-29}

VIII. Evaluation of the hepatic arteries and veins (including portal vein) [One of the following]\textsuperscript{1,13,30-32}
A. Evaluation of portal and hepatic veins prior to or following TIPS (transjugular intrahepatic portosystemic shunt)
B. Evaluation of portal and hepatic veins prior to or following surgical intervention for portal hypertension
C. Evaluation of hepatic vasculature prior to and following embolization procedure
D. Evaluation of hepatic vasculature prior to planned hepatectomy
E. Evaluation of liver donor
F. Suspected hepatic vein thrombosis or Budd-Chiari syndrome \([a + (b or c)]\)
   1. Ascites
   2. Hepatomegaly
   3. Inadequate Doppler ultrasound of hepatic veins
G. Possible portal vein thrombosis with negative or inadequate Doppler study of the portal vein
   1. Hypercoagulable state
H. Preoperative evaluation for pancreatic cancer

IX. Evaluation of abdominal veins other than hepatic and portal veins [One of the following]\textsuperscript{1}
A. Nephrotic syndrome
B. Suspicion of iliac vein thrombus
C. Suspicion of inferior vena cava thrombus
D. Renal vein thrombosis – See XI
E. Mesenteric vein thrombosis

X. Vasculitis and collagen vascular disease\textsuperscript{1} (CTA of abdomen and pelvis, 74174, is the appropriate study.)

XI. Pancreatic cancer – preoperative evaluation of abdominal vessels\textsuperscript{1}
A. Documentation of pancreatic mass on prior CT or MRI

XII. Suspected renal vein thrombosis (Ultrasound is the preferred initial imaging.)\textsuperscript{1} [One of the following]
A. Nephrotic syndrome
B. Proteinuria- 3 grams or more in 24 hours
C. Lupus nephritis
D. Hypercoagulable state [One of the following]
   1. Antiphospholipid antibodies
   2. Behçet's syndrome
   3. Protein C deficiency
   4. Protein S deficiency
   5. Factor V Leiden deficiency
6. Lupus anticoagulant  
7. Hyperactive platelet syndrome  
8. MRHFR  
9. Anti-cardiolipin antibodies  
10. Elevated homocysteine level  
11. Anti B2 glycoprotein antibodies  
12. Elevated fibrinogen  
13. PTT abnormal  
14. Antithrombin III antibodies  
15. Oral contraceptive use  
16. Hormone replacement  
17. Sickle cell anemia

References:

8. Shih MP, Hagspiel, CTA and MRA in mesenteric ischemia: part 1, role in diagnosis and differential diagnosis, AJR, 2007; 188:452-461.


74175 CTA of the Abdomen

Clinical criteria reviewed/revised: 7/18/12, 10/12/11, 8/21/11, 11/17/10, 5/26/10, 1/21/10, 12/09

Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
I. Complaints associated with abdominal or pelvic pain [One of the following]¹⁻¹¹

A. Abdominal pain persisting and one of the following:
   1. Tenderness
   2. Evidence of inflammatory reaction (such as aural temperature >38.3°C or >100.9°F or elevated WBC > 11,500/cu mm)
   3. Muscular rigidity – guarding
   4. Abdominal distention on exam

B. Obstructive uropathy or hydronephrosis (renal, ureteral or, bladder stone causing obstruction) [One of the following]
   1. Pain in flank, radiating toward the groin
   2. Hematuria

C. Diverticulitis [Both]
   1. Lower abdominal pain or mass
   2. Other clinical findings [One of the following]
      a. Aural temperature > 38.3° C or 100.9° F
      b. Leukocytosis, WBC > 11,500/cu.mm
      c. Diverticulosis by prior imaging study
      d. Rebound

D. Abscess [One of the following]
   1. Suspected
      a. Clinical findings [One of the following]
         i. Mass on abdominal, pelvic or rectal exam
         ii. Aural temperature > 38.3° C or 100.9° F
         iii. Leukocytosis, WBC > 11,500/cu.mm
         iv. Rebound
   2. Follow up during or after treatment [One of the following]
      a. Condition unimproved or worsening while on treatment
      b. Routine follow-up study after treatment, including evaluation for removal of drain

E. Appendicitis [Both]
   1. Symptoms and signs [One of the following]
      a. Nausea/vomiting
      b. Guarding or abdominal rigidity
      c. Rebound
      d. Tenderness RLQ
e. Aural temperature >38.3°C or 100.9°F
f. Leukocytosis, WBC > 11,500/cu.mm

2. Pregnancy excluded

F. **Crohn’s disease and inflammatory bowel disease (suspected)** [One of the following]

1. Suspected Crohn’s disease [One of the following]
   a. Aural temperature > 38.3°C or 100.9°F
   b. Diarrhea
   c. Weight loss
   d. Fatigue
   e. Abdominal pain
   f. Perianal fistula or fissure
   g. Enterovesical fistula
   h. Enterovaginal fistula
   i. Enterocutaneous fistula
   j. Right lower quadrant tenderness

2. Complications of Crohn’s disease [One of the following]
   a. Suspected abscess, fistula or stricture
      i. Clinical findings [One of the following]
         01. Mass on abdominal, pelvic or rectal exam
         02. Aural temperature > 38.3°C or > 100.9°F
         03. Leukocytosis, WBC >11,500/cu.mm
         04. Abdominal tenderness
         05. Guarding
         06. Rebound
         07. Diarrhea
   b. Follow-up during or after treatment [One of the following]
      i. Condition unimproved or worsening after drainage and IV antibiotics for at least two days
      ii. Condition unimproved or worsening after IV Abx Rx >1 wk
      iii. Routine follow-up study after treatment, including evaluation for removal of drain
   c. Fistula
   d. Small bowel obstruction
   e. Perianal fistula
   f. Stricture or stenosis

3. Any evidence of clinical deterioration while on steroids or immunosuppressives

4. Chronic inflammatory bowel disease (IBD) [One of the following]
   a. Fistulization with or without infection [One of the following]
      i. Aural temperature of > 38.3°C or > 100.9°F
      ii. Tender abdominal mass
      iii. Bladder or vaginal recurrent infections
      iv. Cutaneous fistulas
      v. Perianal disease [One of the following]
         01. Anal fissures or fistulas
         02. Abscess
   b. Diarrhea
   c. Cramping or steady right lower quadrant or periumbilical pain
   d. Small bowel obstruction
e. Focal tenderness, right lower quadrant
f. Palpable, tender mass in the lower abdomen

G. Ulcerative colitis with bloody mucoid stools [One of the following]
   1. Diarrhea
   2. Pain
   3. Tenesmus

II. Evaluation of symptoms after any abdominopelvic surgery\(^1\) [One of the following]
A. Any intra-abdominal surgery
   1. Abdominal pain or tenderness
      a. Abscess [One of the following]
         i. Mass on abdominal, pelvic or rectal exam
         ii. Aural temperature > 38.3°C or > 100.9°F
      b. Leukocytosis, WBC > 11,500/cu.mm
      c. Rebound
B. Follow up after percutaneous drainage of intra-abdominal or pelvic abscess
C. Post cholecystectomy
   1. Clinical findings [One of the following]
      a. Pain
      b. Aural temperature > 38.3°C or > 100.9°F
      c. Leukocytosis, WBC > 11,500/cu.mm
      d. Ileus
      e. Rebound
      f. Elevated liver enzymes
         i. Bilirubin > 1.9mg/dL
         ii. Alkaline phosphatase > 140IU/L
D. Appendicitis after surgery [One of the following]
   1. Persistent Aural temperature > 38.3°C or > 100.9°F
   2. Leukocytosis, WBC > 11,500/cu.mm
   3. Rebound

III. Aneurysm [One of the following]\(^{12-20}\) (CTA of the abdomen and pelvis is preferred.)
A. Suspected rupture of AAA [Both]
   1. New onset of mid-abdominal or back pain
   2. Clinical findings [One of the following]
      a. Pulsatile or expansile mass
      b. Abnormal x-ray or US findings suggesting aortic aneurysm
      c. Falling blood pressure
B. Known AAA [One of the following]
   1. Periodic follow-up of an asymptomatic known AAA will be according to the following schedule if there is an inadequate ultrasound and there has not been a surgical repair [One of the following]
      a. 2.5-2.9 cm every 5 years
      b. 3.0-3.4 cm every 3 years
c. 3.5-3.9 cm every 2 years
d. 4.0-4.4 cm every year
e. 4.5-4.9 cm every 6 months
f. 5.0-5.5 cm every 3-6 months

2. New onset of pain

C. Postoperative evaluation following repair including surgery or endovascular repair (stent graft) [One of the following]
   1. 1 month after repair
   2. 3 months after repair
   3. 6 months after repair
   4. Annually after repair
   5. Suspicion of endoleak

D. Aneurysm of any other intra-abdominal artery detected on other imaging

E. Vascular insufficiency of the bowel (suspicion of) [Both]
   1. Abdominal pain
   2. Other clinical findings [One of the following]
      a. Leukocytosis, WBC > 11,500/cu.mm
      b. Stool positive for occult blood
      c. Nausea, vomiting or diarrhea
      d. History of abdominal angina (pain after eating for approximately 3 hours)

F. Planning for endovascular or surgical repair

G. Screening for aneurysm (Ultrasound screening is the appropriate study. CT, CTA, MRI or MRA should only be used if the aorta cannot be visualized adequately on US, and this must be documented with the US report.) [One of the following]
   1. Pulsatile mass with nondiagnostic ultrasound
   2. History of first-degree relative with an abdominal aortic aneurysm and non interpretable ultrasound
   3. Male age 65-75 with a smoking history

H. Pulsatile mass on abdominal, vaginal or rectal examination

IV. Obstruction of bowel [One of the following]^{21-23}
A. Nondiagnostic flat and upright abdominal x-ray and abdominal pain [One of the following]
   1. Abdominal distention on exam
   2. Constipation or obstipation (no stool or gas for 24-48 hours)
   3. Borborygmus, loud bowel sounds, high pitched tinkling sounds
   4. Diffuse abdominal tenderness on exam
   5. Tympani
   6. High pitched bowel sounds
   7. Abdominal mass
   8. Nausea and vomiting

V. Known or suspected cancer including lymphoma [One of the following]^{24-68}
   (Also see individual cancers listed below under VIII, IX, XXIV-XXVI, XXXIX-LXII.)
A. Initial staging of a primary cancer prior to treatment [One of the following]
1. Lymphoma including primary CNS lymphoma, Hodgkin’s disease and non-Hodgkin’s lymphoma (a separate diagnostic CT is not medically necessary if it was done as part of the PET/CT)
2. Renal cell carcinoma
3. Hepatoma or hepatocellular carcinoma, or gallbladder carcinoma or cholangiocarcinoma
   CT of the abdomen is preferred (CPT codes 74150 or 74160 or 74170)
4. Adrenal carcinoma CT of the abdomen (CPT codes 74150 or 74160 or 74170) is the correct study.
5. Pancreatic carcinoma
6. Leiomyosarcoma of the uterus
7. Endometrial carcinoma
8. Testicular carcinoma
9. Ovarian carcinoma
10. Gastric carcinoma
11. GIST
12. Soft tissue sarcoma involving the retroperitoneum, pelvis or abdomen,
    retroperitoneal/intra-abdominal (includes GIST, desmoid, aggressive fibromatosis and other sarcomas)
13. Testicular cancer, both seminoma and non seminoma
14. Colon carcinoma
15. Rectal carcinoma
16. Anal carcinoma
17. Esophageal carcinoma
18. Neuroendocrine tumors of the abdomen including but not limited to carcinoid, islet cell tumors of the pancreas, pheochromocytoma, paraganglioma, adrenal tumors, poorly differentiated or high grade anaplastic or small cell carcinoma other than lung
19. Bladder cancer with muscle invasion
20. Bone lesion on radiographs suggestive of metastatic disease
21. Breast cancer (This may be done in addition to PET/CT when that study is indicated.)
   a. Clinical stage I–IIB [One of the following]
      i. Alkaline phosphatase > 140 U/L
      ii. Total bilirubin > 1.9 mg/L
      iii. GGT > 42IU/L
      iv. AST > 40IU/L
      v. Palpable abdominal mass
      vi. Abdominal pain
   b. Clinical stage IIIA or higher
22. Non-small cell lung cancer in addition to PET/CT if a tissue diagnosis has been established (CT of the pelvis is not medically necessary, and a CT of the abdomen, 74150, 74160 or 74170, is the correct examination.)
23. Small cell cancer of the lung (CT of the abdomen, 74150, 74160 or 74170, is the correct examination.)

B. Surveillance in asymptomatic individual with no known metastatic disease and no symptoms or signs of relapse [One of the following]
1. Colorectal cancer – see XLII-XLIII below
2. Anal carcinoma – see LVII below
3. Rectal cancer – see XLIII below
4. Hodgkin’s disease – see LIII below
5. Follicular, MALT, nodal marginal cell, mantle cell lymphoma, Burkitt’s lymphoma – see LIV below
6. Renal cell cancer or kidney cancer – see XXXIX below
7. Bladder cancer – see LVIII below
8. Soft tissue sarcoma involving the retroperitoneum, pelvis or abdomen – see LV below
9. Pancreatic cancer – see VIII below
10. Bone sarcoma of the primary site – Use the same technique as used for initial evaluation (osteogenic sarcoma, Ewing’s sarcoma, chondrosarcoma, spindle cell sarcoma of bone, chordoma and other bone tumors) in the pelvis. [One of the following]
   a. May be as frequent as often as every 6 weeks-3 months for 2 years
   b. Every 2-4 months for the next 2 years
   c. Every 6 months for years 5-10
   d. Every 6-12 thereafter
11. GIST – see LV below
12. Ovarian cancer – see XLIV below
13. Hepatoma or hepatocellular carcinoma – see L below
14. Neuroendocrine tumors – see XXII below
15. Breast cancer – see XL below
16. Cervical cancer – see XLI below
17. Gastric cancer – see XLVI below
18. Esophageal cancer – see XLV below
19. Gallbladder cancer – see LI below
20. Cholangiocarcinoma – see LII below
21. Endometrial cancer – see LX below
22. Uterine sarcoma – see LXI below
23. Testicular cancer – see LVI below

C. New or worsening clinical data reported [One of the following]
1. Anorexia
2. Weight loss
3. Abdominal or pelvic pain
4. Abdominal or pelvic mass
5. Hepatomegaly
6. Ascites
7. Bowel obstruction by KUB
8. Pelvic or lower extremity pain
9. Leg weakness or numbness
10. Hematuria
11. Rectal bleeding
12. Vaginal bleeding
13. New or worsening hydronephrosis documented on ultrasound
14. New onset of renal insufficiency [One of the following]
   a. New onset of BUN > 20 mg/dL
   b. New onset of creatinine > 1.5 mg/dL
15. Lab values elevated/increasing [One of the following]
   a. Elevated CEA (> 2.5 in non smoker and > 5.0 in smoker) on two consecutive tests
   b. Rising bilirubin (total bilirubin > 1.9 mg/dL)
c. Alkaline phosphatase > 120IU/L

d. Rising CA 19-9 (pancreatic cancer) >120U/ml

e. Rising CA125 > 35 U/ml

f. Rising PSA on 2 consecutive tests > 4ng/ml

g. New onset of BUN > 20 mg/dL

h. New onset of creatinine > 1.5mg/dL

VI. Known or suspected pancreatitis or pancreatic pseudocyst [One of the following]69-71

A. Suspected acute pancreatitis with abdominal pain, which may radiate to the back (Exams may be repeated at intervals if there is no improvement on therapy, or signs of complications are present.) [One of the following]

1. Amylase > 3 times the upper normal laboratory value

2. Lipase > 3 times the upper normal laboratory value

B. Known pancreatitis with any of the following allows for repeat exams if present [One of the following]

1. Hemodynamic instability
   a. Falling hematocrit
   b. Falling blood pressure

2. Aural temperature > 38.3°C or > 100.9°F

3. Retroperitoneal air on prior CT

4. Positive blood culture

5. Signs of peritonitis (rebound tenderness)

6. Poor oxygen saturation, signs of ARDS (adult respiratory distress syndrome)

7. Signs of renal failure

8. Initial clinical state unimproved after 5 days of therapy

C. Suspected pancreatic pseudocyst [Both]

1. History [One of the following]
   a. Acute pancreatitis with onset at least 4 wks earlier
   b. Pancreatitis secondary to trauma (time irrelevant)
   c. Chronic pancreatitis

2. Clinical findings [One of the following]
   a. Abdominal/back pain
   b. Abdominal tenderness
   c. Abdominal mass

D. Evaluation of known pancreatic pseudocyst [One of the following]

1. Periodic evaluation for change in size

2. New or worsening clinical findings

E. Pancreatic mass on prior US imaging which requires further clarification

VII. Chronic pancreatitis with history of recurrent pancreatitis and abdominal pain (not helpful for early diagnosis; only confirmation of diagnosis and surgical planning)72,73

VIII. Pancreatic cancer or mass41-44 [One of the following]

A. Symptoms [One of the following]
1. Weight loss
2. Midepigastric pain which may radiate to the back

B. Elevated tumor markers [One of the following]
   1. CA19-9 (> 40Ku/L)
   2. CEA > 2.5 in nonsmoker
   3. CEA > 5.0 in a smoker

C. Prior imaging with dilatation of the bile duct and/or pancreatic duct (US, ERCP, MRCP)
   Pancreatic mass on recent prior imaging for "pancreatic protocol"

D. Initial staging of pancreatic cancer if not already performed

E. Painless jaundice – see XV below

F. Follow up immediately after completion of treatment

G. Follow up [One of the following]
   1. Every 3-6 months for 2 years
   2. Annually after 2 years

H. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. New onset of hydronephrosis documented on ultrasound
   9. Lab values elevated/increasing
      a. Rising CEA (> 2.5 in nonsmoker or > 5.0 in smoker)
      b. Rising bilirubin (total bilirubin > 1.9mg/dL)
      c. Alkaline phosphatase > 140U/L
      d. Rising CA 19-9 > 35 U/mL
      e. New onset of BUN > 20mg/dL

IX. Known or suspected adrenal disease or mass including adrenal carcinoma
[One of the following]56,74-77

Note: With suspected pheochromocytoma, if meets criteria, can also approve CT pelvis as uncommon presentation of pheochromocytoma is extra-adrenal, including the bladder. [One of the following]

A. Suspected pheochromocytoma [One of the following]
   1. VMA or metanephrine > 7mg/24hr
   2. Catecholamines >normal

B. Suspected adrenal cortical tumor [One of the following]
   1. 24 hr urine free cortisol > 100mcg/24hr
   2. No suppression by dexamethasone

C. Suspected aldosteronoma [One of the following]
   1. Hypertension with systolic > 160 and diastolic > 100
   2. Hypertension that is drug resistant
   3. Spontaneous or diuretic induced hypokalemia
      a. Serum potassium < 3.5mEq/L
4. Plasma aldosterone to rennin ratio > 20

D. Incidental finding with no history of malignancy 1-4 cm in size [One of the following]
   1. No prior non contrast CT performed
   2. Follow-up 12 months from the original non-contrast CT

E. Incidental finding with no history of malignancy > 4 cm in size

F. Personal history of malignancy

G. Suspicion of adrenal carcinoma [One of the following]
   1. Nonfunctioning adrenal mass > 4 cm on prior US
   2. Cushing’s syndrome
   3. Hirsutism in women
   4. Oligomenorrhea
   5. Virilization in women
   6. Gynecomastia
   7. Testicular atrophy
   8. Elevated DHEA-S
   9. Hypertension
   10. Hypokalemia – serum potassium < 3.5mEq/L
   11. Aural temperature > 38.3°C or > 100.9°F
   12. Weight loss
   13. Abdominal pain and tenderness
   14. Palpable abdominal mass

H. Follow-up of treated adrenal carcinoma
   1. Follow up immediately after completion of treatment to establish a new baseline
   2. Every 3-6 months

X. Splenomegaly with LUQ pain

XI. Complex or solid abdominal or liver mass on recent ultrasound or follow up of known complex or solid mass on prior CT, MRI or ultrasound with no known malignancy78,79

XII. New palpable abdominal mass with non diagnostic ultrasound80

XIII. Known metastatic disease to the liver with no change signs or symptoms may be imaged every 90 days.

XIV. New renal mass suspected or detected on prior imaging (For renal cell cancer, see XXXIX below.) [One of the following]30
   A. Initial evaluation of mass seen on prior imaging with renal protocol
   B. Cystic or solid mass detected on ultrasound
      1. Simple cyst confirmed on prior CT to be simple cyst or Bosniak class I cyst – no further imaging is indicated
   C. Bosniak class II cyst on prior CT (or MRI)
      1. CT may be certified every 6 months for 3 years and if stable no further imaging
XV. Evaluation of painless jaundice demonstrated by either direct bilirubin >.2 or total bilirubin >1.9, a negative or nondiagnostic ultrasound\textsuperscript{43} (CT of the abdomen, CPT code 74150, 74160 or 74170, is preferred.)

XVI. Fever of unknown origin (FUO)\textsuperscript{81} with aural temperature >38.3\textdegree{}C or 100.9\textdegree{}F on several occasions over at least three weeks [One of the following]
A. Uncertain diagnosis after lab studies [All]
   1. Three blood cultures
   2. Urine culture
   3. Tuberculin skin test
   4. HIV antibody assay and HIV viral load for patients at high risk
   5. Chest x-ray
B. Associated night sweats

XVII. Abdominal and pelvic trauma [One of the following]\textsuperscript{82-84}
A. Initial evaluation
B. Follow-up for known/suspected intra-abdominal injury
   1. Periodic assessment
   2. New or worsening symptoms or findings

XVIII. Cryptorchidism (undescended testicle) (MRI is strongly preferred unless contraindicated. The correct procedure is MRI of the abdomen and pelvis. If CT must be used because the MRI is contraindicated it should be of the abdomen and pelvis.)\textsuperscript{85-87} [Both]
A. Testicle not palpable
B. Abdominal and pelvic US nondiagnostic for undescended testicle

XIX. Weight loss\textsuperscript{88} of 10 pounds more than 5\% body weight in a year or less [All]
A. Negative colonoscopy
B. Chest x-ray nondiagnostic for cause of weight loss
C. Normal thyroid function tests (TSH, T3 and T4)
D. Normal renal function tests (BUN and creatinine)

XX. Hematuria\textsuperscript{3}

XXI. CT enterography\textsuperscript{9,89,90} [One of the following]
A. Bowel obstruction
B. Celiac disease
C. Polyposis syndromes
D. Small bowel tumor
E. Suspected Crohn's disease [One of the following]
   1. Aural temperature > 38.3\textdegree{} C or 100.9\textdegree{} F
   2. Diarrhea
   3. Weight loss
   4. Fatigue
5. Abdominal pain
6. Perianal fistula or fissure
7. Enterovesical fistula
8. Enterovaginal fistula
9. Enterocutaneous fistula
10. Right lower quadrant tenderness

F. Complications of Crohn’s disease [One of the following]
1. Suspected abscess, fistula or stricture
   a. Clinical findings [One of the following]
      i. Mass on abdominal, pelvic or rectal exam
      ii. Aural temperature > 38.3°C or 100.9 F
      iii. Leukocytosis, WBC > 11,500/cu.mm
      iv. Abdominal tenderness
      v. Guarding
      vi. Rebound
      vii. Diarrhea
2. Follow up during or after treatment [One of the following]
   a. Condition unimproved or worsening on treatment wk
   b. Routine follow-up study after treatment, including evaluation for removal of drain
3. Fistula
4. Small bowel obstruction
5. Perianal fistula
6. Stricture or stenosis
7. Any evidence of clinical deterioration while on steroids or immunosuppressives

G. Ulcerative colitis

XXII. Suspected or known neuroendocrine tumor including carcinoid, pheochromocytoma, paraganglioma, islet cell tumor of the pancreas, poorly differentiated or high grade or aggressive small cell tumor other than lung [One of the following]^{56,91}
A. Carcinoid [One of the following]
   1. New diagnosis [One of the following]
      a. Elevated urine 5HIAA > 15mg/24hr
      b. Elevated chromogranin A (CgA) > 39ng/L
      c. Elevated substance P > 270 ng/L or pg/mL
      d. Elevated gastrin > 100pg/mL
      e. Elevated serotonin > 330mcmol/L
   2. Known diagnosis post resection [One of the following]
      a. 3-12 months post resection
      b. Repeat scan if rising tumor markers such as 5HIAA, chromogranin, serotonin, gastrin or substance P
B. Islet cell tumor of the pancreas initial [One of the following]
   1. Gastrinoma or Zollinger-Ellison syndrome [One of the following]
      a. Elevated serum gastrin >100pg/m
      b. Positive secretin test
      c. May also present with reflux and peptic ulcers
d. Prominent gastric folds on endoscopy

2. Insulinoma [One of the following]
   a. Elevated serum C peptide
   b. Fasting blood glucose of < 40mg/dL
   c. Elevated serum insulin > 2.0ng/ml

3. Glucagonoma [One of the following]
   a. Elevated serum glucagon > 100pg/ml

4. VIPoma
   a. Elevated Vasoactive Intestinal Polypeptide (VIP) > 70pg/ml

5. Somatostatinoma
   a. Elevated somatostatin

C. Pheochromocytoma [One of the following]
   1. Elevated urine VMA or metanephrine > 7mg/24hr
   2. Elevated catecholamines

D. Restaging after completion of treatment for any islet cell tumor to establish a new baseline

E. Surveillance of islet cell tumors [One of the following]
   1. Scan every 3-12 months
   2. Repeat scan if rising tumor markers as indicated in A-C

XXIII. Evaluation of cirrhosis and portal hypertension [One of the following][92,93]
   A. Hepatitis B or C
      1. Ultrasound demonstrating a liver mass > 1cm
   B. Cirrhosis
      1. Planned TIPS (transjugular intrahepatic portosystemic shunt – relatively noninvasive procedure for portal hypertension)

XXIV. Screening for hepatoma or hepatocellular carcinoma[60,94-99] (CT of the abdomen, CPT codes 74150, 74160 or 74170, is the appropriate study.)

XXV. Non-small cell lung cancer (CT of the abdomen, CPT codes 74150, 74160 or 74170, is the appropriate study.)[26,45,57]

XXVI. Small cell lung cancer (CT of the abdomen, CPT codes 74150, 74160 or 74170, is the appropriate study.)[58]

XXVII. Follow-up of known renal abscess or complicated pyelonephritis[100]

XXVIII. Abscess [One of the following][1,5,9]
   A. Suspected [Both]
      1. Abdominal pain
      2. Other clinical findings [One of the following]
         a. Mass on abdominal, pelvic or rectal exam
         b. Aural temperature > 38.3°C or > 100.9°F
         c. Leukocytosis, WBC > 11,500/cu.mm
         d. Rebound
   B. Follow up during or after treatment [One of the following]
1. Condition unimproved or worsening under treatment
2. Routine follow-up study after treatment including evaluation for removal of drain

XXIX. Suspected abdominal wall hernia\textsuperscript{101-103} [One of the following]
A. Abdominal pain or discomfort [One of the following]
   1. Worsened by straining or lifting
   2. Worsened by prolonged standing
B. Visible or palpable mass [One of the following]
   1. More prominent in upright position
   2. More prominent with Valsalva maneuver
C. Strangulation [All]
   1. Colicky pain abdominal pain
   2. Palpable mass
   3. Signs of intestinal obstruction
D. After abdominal surgery with incisional pain associated with bulge or suspected defect

XXX. Suspected or known dissection of the aorta [One of the following]\textsuperscript{104-108} (CTA preferred)
A. Unequal blood pressure in the arms
B. Rapid onset of “ripping, tearing, searing” severe chest or upper back or abdominal pain
C. Syncope and chest pain
D. Shortness of breath
E. CVA or stroke
F. Loss of pulses
G. Aortic insufficiency murmur
H. Marfan’s syndrome
I. Known aortic valve disease
J. Follow up of known dissection [One of the following]
   1. 1 month after repair
   2. 3 months after repair
   3. 6 months after repair
   4. 12 months after repair
   5. Annually after 12 months
K. New symptoms after repair [One of the following]
   1. Unequal blood pressure in the arms
   2. Rapid onset of “ripping, tearing, searing, or sharp” severe chest or upper back or abdominal pain
   3. Syncope and chest pain
   4. Shortness of breath
   5. CVA or stroke
   6. Loss of pulses
   7. Aortic insufficiency murmur

XXXI. Crohn’s disease and inflammatory bowel disease\textsuperscript{9,89,90} [One of the following]
(For children and women of childbearing age, consider MRI enterography.)
A. Suspected Crohn’s disease [One of the following]
1. Aural temperature > 38.3°C or > 100.9°F
2. Diarrhea
3. Weight loss
4. Fatigue
5. Abdominal pain
6. Perianal fistula or fissure
7. Enterovesical fistula
8. Enterovaginal fistula
9. Enterocutaneous fistula
10. Right lower quadrant tenderness

B. Complications of Crohn's disease [One of the following]
1. Suspected abscess, fistula or stricture
   a. Clinical findings [One of the following]
      i. Mass on abdominal, pelvic or rectal exam
      ii. Aural temperature > 38.3°C or > 100.9°F
      iii. Leukocytosis, WBC > 11,500/cu.mm
      iv. Abdominal tenderness
      v. Guarding
      vi. Rebound
      vii. Diarrhea
   2. Follow-up during or after treatment [One of the following]
      a. Condition unimproved or worsening under treatment
      b. Routine follow-up study after treatment, including evaluation for removal of drain

XXXII. Appendicitis\(^{6,7}\) [Both]
A. Symptoms and signs
1. Nausea/vomiting
2. Guarding or abdominal rigidity
3. Rebound
4. Tenderness RLQ
5. Aural temperature > 38.3°C or 100.9°F
6. Leukocytosis, WBC > 11,500/cu.mm
B. Pregnancy excluded

XXXIII. Diverticulitis, suspected or known in a patient with lower abdominal pain and/or mass\(^{4,5}\) [One of the following]
A. Aural temperature > 38.3°C or 100.9°F
B. Leukocytosis, WBC > 11,500/cu.mm
C. Diverticulosis by prior imaging study
D. Symptoms worsening under treatment with antibiotics and diet restriction after 2 days or more

XXXIV. Kidney or renal stones\(^2\) [One of the following]
A. Flank pain
B. Hematuria or blood in the urine
C. Aural temperature > 38.3°C or > 100.9°F, chills
D. Known renal stone for follow up
E. Hydronephrosis or obstruction on other imaging (such as prior ultrasound or nuclear medicine study)

XXXV. Abdominal distention on physical examination suggestive of obstruction

XXXVI. Evaluation of elevated liver function tests and non-diagnostic ultrasound\textsuperscript{109,110}
A. Laboratory findings [One of the following]
   1. Direct bilirubin > .2
   2. Total bilirubin > 1.9
   3. Alkaline phosphatase > 147IU/L
   4. Gamma GT or GGT > 51 IU/L
   5. AST > 40 IU/L
   6. ALT > 56 IU/L

XXXVII. Soft tissue mass of the abdominal wall\textsuperscript{111}
A. Abdominal x-ray non-diagnostic

XXXVIII. Unilateral leg edema\textsuperscript{112} with venous Doppler excluding venous insufficiency or varicose veins [One of the following]
A. Acute unilateral edema [One of the following]
   1. D-dimer < 500 ng/ml and low suspicion of deep venous thrombosis
   2. No evidence of ruptured Baker’s cyst or injury to the gastrocnemius muscle
B. Chronic unilateral edema
   1. No evidence of reflex sympathetic dystrophy

XXXIX. Renal cell cancer follow up of known cancer [One of the following]\textsuperscript{29-31,59}
A. Initial staging
B. Follow up 2-6 months after completion of treatment
C. Additional follow up as clinically indicated

XL. Breast cancer\textsuperscript{48} [One of the following]
A. Initial staging [One of the following]
   1. Clinical stage I–IIB [One of the following]
      a. Alkaline phosphatase > 140 U/L
      b. Total bilirubin >1.9 mg/L
      c. GGT > 42IU/L
      d. AST > 40IU/L
      e. Palpable abdominal mass
      f. Abdominal pain
   2. Clinical stage IIIA or higher
B. Any evidence of breast cancer recurrence after treatment
C. Known metastatic disease with evidence of progression
D. Known metastatic disease following completion of treatment to establish new baseline
E. New or worsening clinical data reported [One of the following]
   1. Anorexia
2. Weight loss
3. Abdominal or pelvic pain
4. Abdominal or pelvic mass
5. Hepatomegaly
6. Ascites
7. Bowel obstruction by KUB
8. New onset of hydronephrosis documented on ultrasound
9. Lab values elevated/increasing [One of the following]
   a. Rising CEA (> 2.5 in non smoker and > 5.0 in smoker)
   b. Rising bilirubin (Total bilirubin > 1.9mg/dL)
   c. Alkaline phosphatase > 125 U/L
   d. New onset of BUN > 20mg/dL

XLI. **Cervical cancer**[One of the following]
A. Initial staging for Stages IB2 and IIA2, IIB, IIIA, IVA
B. Restaging after completion of therapy
C. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. Rectal bleeding
   9. Vaginal bleeding
   10. Hematuria
   11. New onset of hydronephrosis documented on ultrasound
   12. New onset of renal insufficiency [One of the following]
      a. New onset of BUN > 20mg/dL
      b. New onset of creatinine > 1.5mg/dL

XLII. **Colon cancer**[One of the following]
A. Initial staging
B. Following treatment and no known metastases annually for 3-5 years
C. Known metastases – stable with no clinical change or laboratory changes such as rising tumor
   markers or elevated liver function tests [One of the following]
   1. Every 3-6 months for 2 years
   2. Every 6-12 months for up to 5 years
D. Rising CEA on 2 consecutive tests [One of the following]
   1. > 2.5 in nonsmokers
   2. > 5.0 in smokers
E. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
4. Abdominal or pelvic mass
5. Hepatomegaly
6. Ascites
7. Bowel obstruction by KUB
8. Rectal bleeding
9. Vaginal bleeding
10. Hematuria
11. New onset of hydronephrosis documented on ultrasound
12. New onset of renal insufficiency [One of the following]
   a. New onset of BUN >20mg/dL
   b. New onset of creatinine >1.5mg
13. Lab values elevated/increasing [One of the following]
   a. Rising CEA (> 2.5 in non smoker and >5.0 in smoker)
   b. Rising bilirubin (Total bilirubin >1.9mg/dL)
   c. Alkaline phosphatase > 125 U/L
   d. Rising CA 19-9 >35 U/mL

XLIII. Rectal cancer [One of the following]
A. Initial staging
B. Following treatment with no known metastases and stable [One of the following]
   1. Annually for 3-5 years
   2. Rising CEA (> 2.5 nonsmokers; > 5.0 smokers) If negative repeat in 3 months
C. Known non-resectable metastases
   1. Following chemotherapy aimed at conversion to resectable disease may be done every 2 months to evaluate resectability
D. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. Rectal bleeding
   9. Vaginal bleeding
   10. Hematuria
   11. New onset of hydronephrosis documented on ultrasound
   12. New onset of renal insufficiency [One of the following]
      a. BUN > 20mg/dL
      b. Creatinine > 1.5mg/dL
   13. Lab values elevated/increasing [One of the following]
      a. Rising CEA (> 2.5 in non smoker and >5.0 in smoker)
      b. Alkaline phosphatase > 125 U/L
      c. Rising bilirubin (Total bilirubin >1.9mg/dL)
      d. Rising CA 19-9 >35 U/mL
XLIV. Ovarian cancer, fallopian tube cancer and primary peritoneal cancer [One of the following]39,53
A. Initial staging
B. Following treatment and stable
C. Rising CA-125 with or without prior chemotherapy
D. Clinical relapse with or without prior chemotherapy
E. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. Rectal bleeding
   9. Vaginal bleeding
  10. Hematuria
  11. New onset of hydronephrosis documented on ultrasound
  12. New onset of renal insufficiency [One of the following]
     a. BUN > 20mg/dL
     b. Creatinine > 1.5mg/dL
  13. Lab values elevated/increasing [One of the following]
     a. Rising CEA (> 2.5 in non smoker and > 5.0 in smoker)
     b. Rising bilirubin (Total bilirubin > 1.9mg/dL)
     c. Alkaline phosphatase > 140 U/L
     d. Rising CA 19-9 > 35 U/mL

XLV. Esophageal cancer54 [One of the following]
A. Initial staging
B. Prior to chemoradiation if PET/CT not done
C. Clinical recurrence
D. New or worsening clinical data reported [One of the following]
  1. Anorexia
  2. Weight loss
  3. Abdominal or pelvic pain
  4. Abdominal or pelvic mass
  5. Hepatomegaly
  6. Ascites
  7. Bowel obstruction by KUB
  8. Rectal bleeding
  9. Vaginal bleeding
 10. Hematuria
 11. New onset of hydronephrosis documented on ultrasound
 12. New onset of renal insufficiency [One of the following]
     a. BUN > 20mg/dL
     b. Creatinine > 1.5mg/dL
13. Lab values elevated/increasing [One of the following]
   a. Rising bilirubin (Total bilirubin > 1.9mg/dL)
   b. Alkaline phosphatase > 140 U/L
   c. New onset of BUN > 20mg/dL
   d. New onset of creatinine > 1.5mg/dL

XLVI. Gastric (stomach) cancer55 [One of the following]
   A. Initial staging
   B. Following completion of treatment
   C. Clinical recurrence
   D. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Bowel obstruction by KUB
      8. Rectal bleeding
      9. Vaginal bleeding
     10. Hematuria
     11. New onset of hydronephrosis documented on ultrasound
     12. New onset of renal insufficiency [One of the following]
          a. BUN > 20mg/dL
          b. Creatinine > 1.5mg/dL
     13. Lab values elevated/increasing [One of the following]
          a. Rising bilirubin (Total bilirubin > 1.9mg/dL)
          b. Alkaline phosphatase > 140 U/L

XLVII. Carcinoid56 [One of the following]
   A. Initial staging
   B. Following completion of therapy to establish a new baseline
   C. Surveillance [One of the following]
      1. Carcinoid tumors larger than 2 cm or with incomplete resection and are stable with no 
         evidence of disease (CT of the abdomen and pelvis is preferred.)
      2. Every 3-12 months after resection every 6-12 months
      3. Every 6-12 months thereafter
   D. Abnormal laboratory tests suggesting recurrence [One of the following]
      1. Elevated urine 5HIAA > 15mg/24hr
      2. Elevated chromogranin A (CgA) > 39ng/L
      3. Elevated substance P >270 ng/L or pg/mL

XLVIII. Islet cell tumor of the pancreas56 [One of the following]
   A. Initial staging
   B. Following completion of therapy to establish a new baseline
   C. Surveillance with no evidence of disease [One of the following]
1. Every 3-12 months after resection every 6-12 months
2. Every 6-12 months thereafter

D. Clinical evidence of recurrence [One of the following]
   1. Gastrinoma or Zollinger-Ellison syndrome [One of the following]
      a. Positive secretin test
      b. May also present with reflux and peptic ulcers
      c. Prominent gastric folds on endoscopy
   2. Insulinoma [One of the following]
      a. Elevated serum C peptide
      b. Fasting blood glucose of <40mg/dL
   3. Glucagonoma [One of the following]
      a. Elevated serum glucagon>100pg/ml
      b. Weight loss
   4. VIPoma
      a. Elevated vasoactive intestinal polypeptide (VIP) >70pg/ml
   5. Somatostatinoma
      a. Elevated somatostatin
   6. Pheochromocytoma [One of the following]
      a. Elevated urine VMA or metanephrine >7mg/24hr
      b. Elevated catecholamines
   7. Surveillance of any neuroendocrine tumor [One of the following]
      a. Scan every 3-6 months for more than 5 years
      b. Repeat scan if rising tumor markers as indicated in A-C
   8. Monitoring during treatment
      a. Every 3 months during treatment with chemotherapy or biological therapy

XLIX. Poorly differentiated or high grade or anaplastic small cell carcinoma other than lung56 [One of the following]

A. Initial staging
B. Following completion of treatment to establish a new baseline
C. Surveillance following treatment of resectable disease [One of the following]
   1. Every 3 months for a year
   2. Every 6 months after 1 year
D. Surveillance following treatment of unresectable or metastatic disease
   1. Every 3 months
E. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. Rectal bleeding
   9. Vaginal bleeding
   10. Hematuria
11. New onset of hydronephrosis documented on ultrasound
12. New onset of renal insufficiency [One of the following]
   a. BUN >20mg/dL
   b. Creatinine >1.5mg/dL
13. Lab values elevated/increasing [One of the following]
   a. Rising bilirubin (Total bilirubin >1.9mg/dL)
   b. Alkaline phosphatase > 140 U/L

L. Hepatoma or hepatocellular carcinoma\textsuperscript{33,60} [One of the following]
   A. Initial staging
   B. Following treatment one time and then every 3-6 months for 2 years
   C. After 2 years every 6-12 months
   D. New onset of rising AFP
   E. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Bowel obstruction by KUB
   8. New onset of renal insufficiency [One of the following]
      a. BUN >20mg/dL
      b. Creatinine >1.5mg/dL
   9. New onset of hydronephrosis documented on ultrasound
10. Lab values elevated/increasing [One of the following]
    a. Alkaline phosphatase > 140 U/L
    b. Rising bilirubin (Total bilirubin >1.9mg/dL)
    c. Rising AFP

LI. Gallbladder cancer\textsuperscript{60} [One of the following]
   A. Postoperative scan to establish a new baseline
   B. Repeat CT scan every 6 months for 2 years
   C. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Bowel obstruction by KUB
   8. Lab values elevated/increasing [One of the following]
      a. Rising bilirubin (Total bilirubin >1.9mg/dL)
      b. Alkaline phosphatase > 140IU/L

LII. Cholangiocarcinoma\textsuperscript{60} [One of the following]
A. Initial staging
B. Completion of therapy then every 6 months for 2 years
C. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. Lab values elevated/increasing [One of the following]
      a. Alkaline phosphatase > 140 U/L
      b. Rising bilirubin (Total bilirubin >1.9mg/dL)

LIII. Hodgkin’s lymphoma\textsuperscript{32,61} [One of the following]
A. Initial staging including CNS lymphoma (A separate diagnostic CT is not medically necessary if it was done as part of the PET/CT.) Restaging while on treatment should be done with PET/CT.
B. After treatment with radiation therapy restage with either CT or PET/CT if last PET scan was positive
C. Follow-up after completion of radiation therapy treatment
D. Scan every 6-12 months for 2-5 years
E. Annual scan if there is increased risk for lung cancer (This is optional if none of the factors below are present.) [One of the following]
   1. Treatment with radiation therapy
   2. Treatment with nonalkylating agent chemotherapy
   3. Smoking history
F. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Night sweats
   8. Aural temperature > 38.3°C or > 100.9°F
   9. Bowel obstruction by KUB
   10. Lab values elevated/increasing [One of the following]
      a. Rising bilirubin (total bilirubin >1.9mg/dL)
      b. Alkaline phosphatase > 140 IU/L
      c. BUN >20mg/dL
      d. Creatinine >1.5mg/dL
LIV. Non-Hodgkin’s lymphoma\textsuperscript{34,35,62} (follicular lymphoma, marginal zone lymphoma, MALT lymphoma, mantle cell lymphoma, diffuse large B-cell lymphoma, Burkitt’s lymphoma, peripheral T-cell lymphoma, mycosis fungoides, hairy cell leukemia, post-transplant lymphoproliferative disorders, CLL/SLL) [One of the following]
A. Initial staging in addition to PET/CT
B. Follow up after completion of treatment to establish a new baseline
C. Surveillance
   1. Not more frequently than every 6 months for the first 2 years and not more frequently than annually thereafter
D. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Night sweats
   8. Aural temperature > 38.3°C or > 100.9°F
   9. Hydronephrosis documented on ultrasound
   10. New onset of renal insufficiency [One of the following]
      a. BUN >20mg/dL
      b. Creatinine >1.5mg/dL
   11. Bowel obstruction by KUB
   12. Lab values elevated/increasing [One of the following]
      a. Rising bilirubin (Total bilirubin >1.9mg/dL)
      b. Alkaline phosphatase >140 IU/L

LV. Soft tissue sarcoma\textsuperscript{36,63} [One of the following]
A. Myxoid/round cell liposarcoma (CT of the abdomen and pelvis is preferred for initial staging.)
B. Retroperitoneal/intra-abdominal (includes GIST, desmoid, aggressive fibromatosis and other sarcomas) (CT of the abdomen and pelvis is preferred for initial staging.) [One of the following]
   1. Initial staging
   2. Follow-up [One of the following]
      a. Following completion of treatment to establish a new baseline (one time)
      b. Every 3-6 months for 2-3 years (for GIST tumor every 3-6 months for 3-5 years)
      c. Every 6 months for next 2 years
      d. Annually after 4-5 years

LVI. Testicular cancer\textsuperscript{66} [One of the following]
A. Pure seminoma (CT of the abdomen and pelvis is preferred for initial staging.) [One of the following]
   1. Initial staging
   2. Follow up after treatment to establish a new baseline
3. Surveillance of Stage IA and IB tumors not treated with chemotherapy or radiation therapy
   [One of the following]
   a. Every 6 months for 1-2 years
   b. Every 6-12 months for year 3
   c. Annually for years 4 and 5
4. Stage 1A and IB tumors treated with single agent
   a. Annual CT of the abdomen and pelvis for 1-3 years
5. Stage IA, IB and IS treated with radiation
   a. Annual CT of the abdomen and pelvis for 1-3 years
6. Stage IIA and IIB following completion of radiation therapy [One of the following]
   a. Every 6-12 months for 1-2 years
   b. Annually for year 3
7. Stage IIB, IIC and III after chemotherapy
   a. Surveillance after restaging [One of the following]
      i. No residual mass or mass less than or equal to 3cm with normal AFP, beta HCG
         and LDH may be repeated as clinically indicated (changing markers, new
         symptoms)
      ii. Residual mass > 3cm and normal AFP, beta HCG and LDH following a PET scan
         6 weeks after completion of therapy if there is activity repeat the CT of the
         abdomen and pelvis following either retroperitoneal lymph node dissection or
         second line chemotherapy or RT 3-6 months after last treatment
B. Non seminoma (CT of the abdomen and pelvis is preferred for initial staging,) [One of the
   following]
1. Stage IA, IB if surveillance only [One of the following]
   a. Every 3-4 months for 1st year
   b. Every 4-6 months for 2nd year
   c. Every 6-12 months for 3rd and 4th year
   d. Annually for 5th year
   e. Every 1-2 years
2. Stage IB, IIA and IIB after chemotherapy
   a. Following completion of therapy to establish a new baseline
   b. Negative AFP with or without a mass [One of the following]
      i. Every 6 months for 1 year
      ii. Every 6-12 months for the 2nd year
      iii. Annually years 3-5
C. New or worsening clinical data reported [One of the following]
1. Anorexia
2. Weight loss
3. Jaundice
4. Abdominal or pelvic pain
5. Abdominal or pelvic mass
6. Hepatomegaly
7. Ascites
8. Bowel obstruction by KUB
9. Rising AFP
10. Rising beta HCG
11. Rising LDH
12. New onset of hydronephrosis documented on ultrasound
13. New onset of renal insufficiency [One of the following]
   a. BUN >20mg/dL
   b. Creatinine >1.5mg/dL

LVII. Anal cancer46 [One of the following]
   A. Initial staging
   B. After completion of treatment
   C. Surveillance after first post treatment scan [One of the following]
      1. Annual CT scan of the abdomen and pelvis for three years if stable
      2. Annually for abdominoperineal resection
   D. Clinical suspicion of recurrence [One of the following]
      1. Findings on physical examination suggestive of recurrence
      2. Anorexia
      3. Weight loss
      4. Alkaline phosphatase > 140 U/L
      5. Rising bilirubin (total bilirubin >1.9mg/dL)
      6. Abdominal or pelvic pain
      7. Abdominal or pelvic mass
      8. Hepatomegaly
      9. Ascites
      10. Bowel obstruction by KUB
   11. New onset of renal insufficiency [One of the following]
      a. BUN >20mg/dL
      b. Creatinine >1.5mg/dL
   12. New onset of hydronephrosis documented on ultrasound

LVIII. Bladder cancer47 [One of the following]
   A. Initial staging if muscle invasion on biopsy
   B. Following completion of treatment and bladder in place
      1. Every 3-6 months for 2 years
   C. Following completion of treatment including cystectomy
      1. Every 3-12 months for 2 years
   D. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Jaundice
      4. Abdominal or pelvic pain
      5. Abdominal or pelvic mass
      6. Hepatomegaly
      7. Ascites
      8. Hematuria
      9. Bowel obstruction by KUB
      10. Rectal bleeding
      11. Vaginal bleeding
      12. Hematuria
13. New onset of renal insufficiency [One of the following]
   a. New onset of BUN >20mg/dL
   b. New onset of creatinine >1.5mg/dL

14. New onset of hydronephrosis documented on ultrasound

LIX. New bone lesion suspicious for a metastatic lesion with no known cancer
[Both]
   A. X-ray demonstrating a bone lesion suspicious for a metastatic lesion
   B. 40 years of age or older

LX. Endometrial cancer
[One of the following]
   A. Incomplete surgical staging
   B. Follow up as clinically indicated

LXI. Uterine leiomyosarcoma [One of the following]
   A. Known or suspected extra uterine disease
   B. Follow up as clinically indicated

LXII. Malignant mesothelioma
A. Initial staging

LXIII. TAVR (transcatheter aortic valve replacement) planning

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74176, 74177, 74178 CT Abdomen and Pelvis

Clinical criteria reviewed/revised: 8/9/12, 7/3/12, 6/28/11, 11/17/10, 1/20/11
Medical Advisory Committee reviewed and approved: 9/19/12, 6/27/12, 9/21/11
74176  CT of the Abdomen and Pelvis without Contrast
74177  CT of the Abdomen and Pelvis with Contrast
74178  CT of the Abdomen and Pelvis with and without Contrast

Medicare AL, GA, TN

Note: For radiation therapy planning, use 77014.
For CT guided needle placement, biopsy, or drainage, use 77012.
For CT guided tissue ablation, use 77013.

I. Abdominal or pelvic pain

II. Jaundice or abnormal liver function tests with normal US

III. Suspected renal or kidney tumor

IV. Trauma

V. Renal stones

VI. Known or suspected pancreatitis or pancreatic pseudocyst [One of the following]a-b
   A. Suspected acute pancreatitis with abdominal pain, which may radiate to the back (Exams may be repeated at intervals if there is no improvement on therapy, or signs of complications are present.) [One of the following]
      1. Amylase > 3 times the upper normal laboratory value
      2. Lipase > 3 times the upper normal laboratory value
   B. Known pancreatitis with any of the following allows for repeat exams if present [One of the following]
      1. Hemodynamic instability
         a. Falling hematocrit
         b. Falling blood pressure
      2. Aural temperature > 38.3°C or > 100.9°F
      3. Retroperitoneal air on prior CT
      4. Positive blood culture
      5. Signs of peritonitis (rebound tenderness)
      6. Poor oxygen saturation, signs of ARDS (adult respiratory distress syndrome)
      7. Signs of renal failure
      8. Initial clinical state unimproved after 5 days of therapy
   C. Suspected pancreatic pseudocyst [Both]
      1. History [One of the following]
         a. Acute pancreatitis with onset at least 4 wks earlier
b. Pancreatitis secondary to trauma (time irrelevant)
c. Chronic pancreatitis
2. Clinical findings [One of the following]
   a. Abdominal/back pain
   b. Abdominal tenderness
   c. Abdominal mass
D. Evaluation of known pancreatic pseudocyst [One of the following]
   1. Periodic evaluation for change in size
   2. New or worsening clinical findings
E. Pancreatic mass on prior US imaging which requires further clarification

VII. Pancreatic pseudocyst

VIII. Splenomegaly

IX. Ascites

X. Response to chemotherapy or radiation therapy

XI. Follow up to surgery

XII. Evaluation of known or suspected abdominal or pelvic inflammatory processes

XIII. Evaluation of known or suspected abdominal or pelvic fluid collection

XIV. Bowel obstruction

XV. Hematuria

XVI. Suspected or known dissection of the aorta [One of the following]7-12 (CTA preferred)
   A. Unequal blood pressure in the arms
   B. Rapid onset of “ripping, tearing, searing” severe chest or upper back or abdominal pain
   C. Syncope and chest pain
   D. Shortness of breath
   E. CVA or stroke
   F. Loss of pulses
   G. Aortic insufficiency murmur
   H. Marfan’s syndrome
   I. Known aortic valve disease
   J. Follow up of known dissection [One of the following]
      1. 1 month after repair
      2. 3 months after repair
      3. 6 months after repair
      4. 12 months after repair
5. Annually after 12 months
K. New symptoms after repair [One of the following]
   1. Unequal blood pressure in the arms
   2. Rapid onset of “ripping, tearing, searing, or sharp” severe chest or upper back or abdominal pain
   3. Syncope and chest pain
   4. Shortness of breath
   5. CVA or stroke
   6. Loss of pulses
   7. Aortic insufficiency murmur

XVII. Aneurysm [One of the following]¹³⁻¹⁹ (CTA of the abdomen and pelvis is preferred.)
A. Suspected rupture of AAA [Both]
   1. New onset of mid-abdominal or back pain
   2. Clinical findings [One of the following]
      a. Pulsatile or expansile mass
      b. Abnormal x-ray or US findings suggesting aortic aneurysm
      c. Falling blood pressure
B. Known AAA [One of the following]
   1. Periodic follow-up of an asymptomatic known AAA will be according to the following schedule if there is an inadequate ultrasound and there has not been a surgical repair [One of the following]
      a. 2.5-2.9 cm every 5 years
      b. 3.0-3.4 cm every 3 years
      c. 3.5-3.9 cm every 2 years
      d. 4.0-4.4 cm every year
      e. 4.5-4.9 cm every 6 months
      f. 5.0-5.5 cm every 3-6 months
   2. New onset of pain
C. Postoperative evaluation following repair including surgery or endovascular repair (stent graft) [One of the following]
   1. 1 month after repair
   2. 3 months after repair
   3. 6 months after repair
   4. Annually after repair
   5. Suspicion of endoleak
D. Aneurysm of any other intra-abdominal artery detected on other imaging
E. Vascular insufficiency of the bowel (suspicions) [Both]
   1. Abdominal pain
   2. Other clinical findings [One of the following]
      a. Leukocytosis, WBC > 11,500/cu.mm
      b. Stool positive for occult blood
      c. Nausea, vomiting or diarrhea
      d. History of abdominal angina (pain after eating for approximately 3 hours)
F. Planning for endovascular or surgical repair
G. Screening for aneurysm (Ultrasound screening is the appropriate study. CT, CTA, MRI or MRA should only be used if the aorta cannot be visualized adequately on US, and this must be documented with the US report.) [One of the following]
   1. Pulsatile mass with nondiagnostic ultrasound
   2. History of first-degree relative with an abdominal aortic aneurysm and non-interpretable ultrasound
   3. Male age 65-75 with a smoking history
H. Pulsatile mass on abdominal, vaginal or rectal examination

XVIII. Clarification of findings from other imaging studies or abnormal laboratory findings

XIX. Evaluation of known or suspected congenital abnormalities of the abdomen or pelvis

XX. Treatment planning for radiation therapy – CPT code 77014 is the correct code for this indication.

XXI. Staging of known tumors including suspected metastases – See XXX-XLVI.

XXII. History of malignancy including follow up or suspicion of metastatic disease (CT of the abdomen and pelvis is preferred) – See XXX-XLVI.

XXIII. Known or suspected cancer including lymphoma [One of the following]28-41
   (Also see individual cancers listed below.)
   A. Initial staging of a primary cancer prior to treatment [One of the following]
      1. Lymphoma including primary CNS lymphoma, Hodgkin's disease and non-Hodgkin's lymphoma (A separate diagnostic CT is not medically necessary if it was done as part of the PET/CT.)
      2. Renal cell carcinoma
      3. Hepatoma or hepatocellular carcinoma, or gallbladder carcinoma or cholangiocarcinoma – CT of the abdomen is preferred (CPT codes 74150 or 74160 or 74170).
      4. Adrenal carcinoma – CT of the abdomen (CPT codes 74150 or 74160 or 74170) is the correct study.
      5. Pancreatic carcinoma
      6. Leiomyosarcoma of the uterus
      7. Endometrial carcinoma
      8. Testicular carcinoma
      9. Ovarian carcinoma
     10. Gastric carcinoma
     11. GIST
     12. Soft tissue sarcoma involving the retroperitoneum, pelvis or abdomen, retroperitoneal/intra-abdominal (includes GIST, desmoid, aggressive fibromatosis and other sarcomas)
     13. Testicular cancer, both seminoma and non seminoma
14. Colon carcinoma
15. Rectal carcinoma
16. Anal carcinoma
17. Esophageal carcinoma
18. Neuroendocrine tumors of the abdomen including but not limited to carcinoid, islet cell tumors of the pancreas, pheochromocytoma, paraganglioma, adrenal tumors, poorly differentiated or high grade anaplastic or small cell carcinoma other than lung
19. Bladder cancer with muscle invasion
20. Bone lesion on radiographs suggestive of metastatic disease
21. Breast cancer (This may be done in addition to PET/CT when that study is indicated.)
   a. Clinical stage I–IIB [One of the following]
      i. Alkaline phosphatase >140 U/L
      ii. Total bilirubin >1.9 mg/L
      iii. GGT > 42IU/L
      iv. AST >40IU/L
      v. Palpable abdominal mass
      vi. Abdominal pain
   b. Clinical stage IIIA or higher
22. Non-small cell lung cancer in addition to PET/CT if a tissue diagnosis has been established (CT of the pelvis is not medically necessary, and a CT of the abdomen, 74150, 74160 or 74170, is the correct examination.)
23. Small cell cancer of the lung (CT of the abdomen, 74150, 74160 or 74170, is the correct examination.)

B. Surveillance in asymptomatic individual with no known metastatic disease and no symptoms or signs of relapse [One of the following] see appropriate cancers below
1. Colorectal cancer
2. Anal carcinoma
3. Rectal cancer
4. Hodgkin’s disease
5. Follicular, MALT, nodal marginal cell, mantle cell lymphoma, Burkitt’s lymphoma
6. Renal cell cancer or kidney cancer
7. Bladder cancer
8. Soft tissue sarcoma involving the retroperitoneum, pelvis or abdomen
9. Pancreatic cancer
10. Bone sarcoma of the primary site – Use the same technique as used for initial evaluation (osteogenic sarcoma, Ewing’s sarcoma, chondrosarcoma, spindle cell sarcoma of bone, chordoma and other bone tumors) in the pelvis. [One of the following]
   a. May be as frequent as often as every 6 weeks-3 months for 2 years
   b. Every 2-4 months for the next 2 years
   c. Every 6 months for years 5-10
   d. Every 6-12 thereafter
11. GIST
12. Ovarian cancer
13. Hepatoma or hepatocellular carcinoma
14. Neuroendocrine tumors
15. Breast cancer
16. Cervical cancer
17. Gastric cancer
18. Esophageal cancer
19. Gallbladder cancer
20. Cholangiocarcinoma
21. Endometrial cancer
22. Uterine sarcoma
23. Testicular cancer

C. New or worsening clinical data reported [One of the following] (CT of the abdomen and pelvis is the correct study, CPT codes 74176 or 74177 or 74178.)
1. Anorexia
2. Weight loss
3. Abdominal or pelvic pain
4. Abdominal or pelvic mass
5. Hepatomegaly
6. Ascites
7. Bowel obstruction by KUB
8. Pelvic or lower extremity pain
9. Leg weakness or numbness
10. Hematuria
11. Rectal bleeding
12. Vaginal bleeding
13. New or worsening hydronephrosis documented on ultrasound
14. New onset of renal insufficiency [One of the following]
   a. New onset of BUN >20 mg/dL
   b. New onset of creatinine >1.5mg/dL
15. Lab values elevated/increasing [One of the following]
   a. Elevated CEA (>2.5 in non smoker and >5.0 in smoker) on two consecutive tests
   b. Rising bilirubin (total bilirubin >1.9mg/dL)
   c. Alkaline phosphatase > 120IU/L
   d. Rising CA 19-9 (pancreatic cancer) >120U/ml
   e. Rising CA12S >35 U/ml
   f. Rising PSA on 2 consecutive tests >4ng/ml
   g. New onset of BUN >20 mg/dL
   h. New onset of creatinine >1.5mg/dL

XXIV. Renal cell cancer follow up of known cancer [One of the following]
   A. Initial staging
   B. Follow up 2-6 months after completion of treatment

XXV. Breast cancer [One of the following]
   A. Initial staging [One of the following]
      1. Clinical stage I–IIB [One of the following]
         a. Alkaline phosphatase >140 U/L
         b. Total bilirubin >1.9 mg/L
         c. GGT > 42IU/L
         d. AST >40UI/L
e. Palpable abdominal mass  
f. Abdominal pain  

2. Clinical stage IIIA or higher  

B. Any evidence of breast cancer recurrence after treatment  

C. Known metastatic disease with evidence of progression  

D. New or worsening clinical data reported [One of the following]  
   1. Anorexia  
   2. Weight loss  
   3. Abdominal or pelvic pain  
   4. Abdominal or pelvic mass  
   5. Hepatomegaly  
   6. Ascites  
   7. Bowel obstruction by KUB  
   8. New onset of hydronephrosis documented on ultrasound  
   9. Lab values elevated/increasing [One of the following]  
      a. Rising CEA (>2.5 in non smoker and >5.0 in smoker)  
      b. Rising bilirubin (Total bilirubin >1.9mg/dL)  
      c. Alkaline phosphatase > 125 U/L  
      d. New onset of BUN >20mg/dL  

XXVI. Cervical cancer [One of the following]  
   A. Initial staging for Stages IB2 and IIA2, IIB, IIA, IVA  
   B. New or worsening clinical data reported [One of the following]  
      1. Anorexia  
      2. Weight loss  
      3. Abdominal or pelvic pain  
      4. Abdominal or pelvic mass  
      5. Hepatomegaly  
      6. Ascites  
      7. Bowel obstruction by KUB  
      8. Rectal bleeding  
      9. Vaginal bleeding  
      10. Hematuria  
      11. New onset of hydronephrosis documented on ultrasound  
      12. New onset of renal insufficiency [One of the following]  
         a. New onset of BUN >20mg/dL  
         b. New onset of creatinine >1.5mg/d  

XXVII. Colon cancer [One of the following]  
   A. Initial staging  
   B. Following treatment and no known metastases annually for 3-5 years  
   C. Known metastases – stable with no clinical change or laboratory changes such as rising tumor markers or elevated liver function tests [One of the following]  
      1. Every 3-6 months for 2 years  
      2. Every 6-12 months for up to 5 years  
   D. Rising CEA on 2 consecutive tests [One of the following]  
      1. > 2.5 in nonsmokers
2. >5.0 in smokers

E. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. Rectal bleeding
   9. Vaginal bleeding
   10. Hematuria
   11. New onset of hydronephrosis documented on ultrasound
   12. New onset of renal insufficiency [One of the following]
      a. New onset of BUN >20mg/dL
      b. New onset of creatinine >1.5mg
   13. Lab values elevated/increasing [One of the following]
      a. Rising CEA (>2.5 in non smoker and >5.0 in smoker)
      b. Rising bilirubin (Total bilirubin >1.9mg/dL)
      c. Alkaline phosphatase > 125 U/L
      d. Rising CA 19-9 >35 U/mL

XXVIII. Rectal cancer26 [One of the following]
   A. Initial staging
   B. Following treatment with no known metastases and stable [One of the following]
      1. Annually for 3-5 years
      2. Rising CEA (> 2.5 nonsmokers; > 5.0 smokers) If negative repeat in 3 months
   C. Known non-resectable metastases
      1. Following chemotherapy aimed at conversion to resectable disease may be done every 2 months to evaluate resectability
   D. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Bowel obstruction by KUB
      8. Rectal bleeding
      9. Vaginal bleeding
      10. Hematuria
      11. New onset of hydronephrosis documented on ultrasound
      12. New onset of renal insufficiency [One of the following]
         a. BUN >20mg/dL
         b. Creatinine >1.5mg/dL
      13. Lab values elevated/increasing [One of the following]
         a. Rising CEA (>2.5 in non smoker and >5.0 in smoker)
b. Alkaline phosphatase > 125 U/L

c. Rising bilirubin (Total bilirubin >1.9mg/dL)

d. Rising CA 19-9 >35 U/mL

XXIX. Ovarian cancer, fallopian tube cancer and primary peritoneal cancer [One of the following]27

A. Initial staging
B. Following treatment and stable
C. Rising CA-125 with or without prior chemotherapy
D. Clinical relapse with or without prior chemotherapy
E. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. Rectal bleeding
   9. Vaginal bleeding
   10. Hematuria
   11. New onset of hydronephrosis documented on ultrasound
   12. New onset of renal insufficiency [One of the following]
      a. BUN >20mg/dL
      b. Creatinine >1.5mg/dL
   13. Lab values elevated/increasing [One of the following]
      a. Rising CEA (>2.5 in non smoker and >5.0 in smoker)
      b. Rising bilirubin (Total bilirubin >1.9mg/dL)
      c. Alkaline phosphatase > 140 U/L
      d. Rising CA 19-9 > 35 U/mL

XXX. Esophageal cancer28 [One of the following]

A. Initial staging
B. Prior to chemoradiation if PET/CT not done
C. Clinical recurrence
D. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. Rectal bleeding
   9. Vaginal bleeding
   10. Hematuria
11. New onset of hydronephrosis documented on ultrasound
12. New onset of renal insufficiency [One of the following]
   a. BUN >20mg/dL
   b. Creatinine >1.5mg/dL
13. Lab values elevated/increasing [One of the following]
   a. Rising bilirubin (Total bilirubin >1.9mg/dL)
   b. Alkaline phosphatase > 140 U/L
   c. New onset of BUN >20mg/dL
   d. New onset of creatinine >1.5mg/dL

XXXI. Gastric (stomach) cancer29 [One of the following]
   A. Initial staging
   B. Following completion of treatment
   C. Clinical recurrence
   D. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Bowel obstruction by KUB
      8. Rectal bleeding
      9. Vaginal bleeding
     10. Hematuria
     11. New onset of hydronephrosis documented on ultrasound
     12. New onset of renal insufficiency [One of the following]
        a. BUN >20mg/dL
        b. Creatinine >1.5mg/dL
     13. Lab values elevated/increasing [One of the following]
        a. Rising bilirubin (total bilirubin >1.9mg/dL)
        b. Alkaline phosphatase > 140 U/L

XXXII. Carcinoid30 [One of the following]
   A. Initial staging
   B. Surveillance [One of the following]
      1. Carcinoid tumors larger than 2 cm or with incomplete resection and are stable with no evidence of disease (CT of the abdomen and pelvis is preferred.)
      2. Every 3-12 months after resection every 6-12 months
      3. Every 6-12 months thereafter
   C. Abnormal laboratory tests suggesting recurrence [One of the following]
      1. Elevated urine 5HIAA >15mg/24hr
      2. Elevated chromogranin A (CgA) >39ng/L
      3. Elevated substance P >270 ng/L or pg/mL

XXXIII. Islet cell tumor of the pancreas30 [One of the following]
A. Initial staging
B. Surveillance with no evidence of disease [One of the following]
   1. Every 3-12 months after resection every 6-12 months
   2. Every 6-12 months thereafter
C. Clinical evidence of recurrence [One of the following]
   1. Gastrinoma or Zollinger-Ellison syndrome [One of the following]
      a. Positive secretin test
      b. May also present with reflux and peptic ulcers
      c. Prominent gastric folds on endoscopy
   2. Insulinoma [One of the following]
      a. Elevated serum C peptide
      b. Fasting blood glucose of <40mg/dL
   3. Glucagonoma [One of the following]
      a. Elevated serum glucagon>100pg/ml
      b. Weight loss
   4. VIPoma
      a. Elevated vasoactive intestinal polypeptide (VIP) >70pg/ml
   5. Somatostatinoma
   6. Pheochromocytoma [One of the following]
      a. Elevated urine VMA or metanephrine >7mg/24hr
      b. Elevated catecholamines
   7. Surveillance of any neuroendocrine tumor [One of the following]
      a. Scan every 3-6 months for more than 5 years
      b. Repeat scan if rising tumor markers as indicated in A-C
   8. Monitoring during treatment
      a. Every 3 months during treatment with chemotherapy or biological therapy

XXXIV. Poorly differentiated or high grade or anaplastic small cell carcinoma other than lung³⁰ [One of the following]
A. Initial staging
B. Surveillance following treatment of resectable disease [One of the following]
   1. Every 3 months for a year
   2. Every 6 months after 1 year
C. Surveillance following treatment of unresectable or metastatic disease
   1. Every 3 months
D. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. Rectal bleeding
   9. Vaginal bleeding
10. Hematuria
11. New onset of hydronephrosis documented on ultrasound
12. New onset of renal insufficiency [One of the following]
   a. BUN >20mg/dL
   b. Creatinine >1.5mg/dL
13. Lab values elevated/increasing [One of the following]
   a. Rising bilirubin (Total bilirubin >1.9mg/dL)
   b. Alkaline phosphatase > 140 U/L

XXXV. Hepatoma or hepatocellular carcinoma\textsuperscript{34} [One of the following]
   A. Initial staging
   B. Following treatment every 3-6 months for 2 years
   C. After 2 years every 6-12 months
   D. New onset of rising AFP
   E. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Bowel obstruction by KUB
     8. New onset of renal insufficiency [One of the following]
        a. BUN >20mg/dL
        b. Creatinine >1.5mg/dL
     9. New onset of hydronephrosis documented on ultrasound
    10. Lab values elevated/increasing [One of the following]
        a. Alkaline phosphatase > 140 U/L
        b. Rising bilirubin (total bilirubin >1.9mg/dL)
        c. Rising AFP

XXXVI. Gallbladder cancer\textsuperscript{34} [One of the following]
   A. Postoperative scan to establish a new baseline
   B. Repeat CT scan every 6 months for 2 years
   C. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Bowel obstruction by KUB
     8. Lab values elevated/increasing [One of the following]
        a. Rising bilirubin (total bilirubin >1.9mg/dL)
        b. Alkaline phosphatase > 140IU/L
XXXVII. Cholangiocarcinoma\textsuperscript{34} [One of the following]
   A. Initial staging
   B. Completion of therapy then every 6 months for 2 years
   C. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Bowel obstruction by KUB
      8. Lab values elevated/increasing [One of the following]
         a. Alkaline phosphatase $> 140$ U/L
         b. Rising bilirubin (total bilirubin $>1.9$mg/dL)

XXXVIII. Hodgkin’s lymphoma\textsuperscript{35} [One of the following]
   A. Initial staging including CNS lymphoma (A separate diagnostic CT is not medically necessary if it was done as part of the PET/CT.) – Restaging while on treatment should be done with PET/CT.
   B. After treatment with radiation therapy restage with either CT or PET/CT if last PET scan was positive
   C. Follow-up after completion of radiation therapy treatment
   D. Scan every 6-12 months for 2-5 years
   E. Annual scan if there is increased risk for lung cancer (This is optional if none of the factors below are present.) [One of the following]
      1. Treatment with radiation therapy
      2. Treatment with nonalkylating agent chemotherapy
      3. Smoking history
   F. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Night sweats
      8. Fever
      9. Bowel obstruction by KUB
     10. Lab values elevated/increasing [One of the following]
         a. Rising bilirubin (total bilirubin $>1.9$mg/dL)
         b. Alkaline phosphatase $> 140$ IU/L
         c. BUN $>20$mg/dL
         d. Creatinine $>1.5$mg/dL
XXXIX. Non-Hodgkin’s lymphoma\textsuperscript{36} (follicular lymphoma, marginal zone lymphoma, MALT lymphoma, mantle cell lymphoma, diffuse large B-cell lymphoma, Burkitt’s lymphoma, peripheral T-cell lymphoma, mycosis fungoides, hairy cell leukemia, post-transplant lymphoproliferative disorders, CLL/SLL) [One of the following]

A. Initial staging in addition to PET/CT
B. Surveillance
   1. Not more frequently than every 6 months for the first 2 years and not more frequently than annually thereafter
C. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Night sweats
   8. Fever
   9. Hydronephrosis documented on ultrasound
   10. New onset of renal insufficiency [One of the following]
       a. BUN $>$20mg/dL
       b. Creatinine $>$1.5mg/dL
   11. Bowel obstruction by KUB
   12. Lab values elevated/increasing [One of the following]
       a. Rising bilirubin (total bilirubin $>$1.9mg/dL)
       b. Alkaline phosphatase $>$140 IU/L

XL. Soft tissue sarcoma\textsuperscript{37} [One of the following]

A. Myxoid/round cell liposarcoma (CT of the abdomen and pelvis is preferred for initial staging)
B. Retroperitoneal/intra-abdominal (includes GIST, desmoid, aggressive fibromatosis and other sarcomas) (CT of the abdomen and pelvis is preferred for initial staging.) [One of the following]
   1. Initial staging
   2. Follow-up [One of the following]
      a. Every 3-6 months for 2-3 years (for GIST tumor every 3-6 months for 3-5 years)
      b. Every 6 months for next 2 years
      c. Annually after 4-5 years

XLI. Testicular cancer\textsuperscript{40} [One of the following]

A. Pure seminoma (CT of the abdomen and pelvis is preferred for initial staging) [One of the following]
   1. Initial staging
   2. Surveillance of Stage IA and IB tumors not treated with chemotherapy or radiation therapy [One of the following]
      a. Every 6 months for 1-2 years
      b. Every 6-12 months for year 3
      c. Annually for years 4 and 5
3. Stage 1A and IB tumors treated with single agent
   a. Annual CT of the abdomen and pelvis for 1-3 years
4. Stage IA, IB and I S treated with radiation
   a. Annual CT of the abdomen and pelvis for 1-3 years
5. Stage IIA and IIB following completion of radiation therapy [One of the following]
   a. Every 6-12 months for 1-2 years
   b. Annually for year 3
6. Stage IIB, IIC and III after chemotherapy
   a. Following completion of therapy [One of the following]
      i. No residual mass or mass less than or equal to 3cm with normal AFP, beta HCG and LDH may be repeated as clinically indicated (changing markers, new symptoms)
      ii. Residual mass > 3cm and normal AFP, beta HCG and LDH following a PET scan 6 weeks after completion of therapy if there is activity repeat the CT of the abdomen and pelvis following either retroperitoneal lymph node dissection or second line chemotherapy or RT 3-6 months after last treatment
B. Non seminoma (CT of the abdomen and pelvis is preferred for initial staging) [One of the following]
1. Stage IA, IB if surveillance only [One of the following]
   a. Every 3-4 months for 1st year
   b. Every 4-6 months for 2nd year
   c. Every 6-12 months for 3rd and 4th year
   d. Annually for 5th year
   e. Every 1-2 years
2. Stage IB, IIA and IIB after chemotherapy
   a. Negative AFP with or without a mass [One of the following]
      i. Every 6 months for 1 year
      ii. Every 6-12 months for the 2nd year
      iii. Annually years 3-5
C. New or worsening clinical data reported [One of the following]
1. Anorexia
2. Weight loss
3. Jaundice
4. Abdominal or pelvic pain
5. Abdominal or pelvic mass
6. Hepatomegaly
7. Ascites
8. Bowel obstruction by KUB
9. Rising AFP
10. Rising beta HCG
11. Rising LDH
12. New onset of hydronephrosis documented on ultrasound
13. New onset of renal insufficiency [One of the following]
   a. BUN >20mg/dL
   b. Creatinine >1.5mg/dL

XLII. Anal cancer20 [One of the following]
A. Initial staging
B. After completion of treatment
C. Surveillance after first post treatment scan [One of the following]
   1. Annual CT scan of the abdomen and pelvis for three years if stable
   2. Annually for abdominoperineal resection
D. Clinical suspicion of recurrence [One of the following]
   1. Findings on physical examination suggestive of recurrence
   2. Anorexia
   3. Weight loss
   4. Alkaline phosphatase > 140 U/L
   5. Rising bilirubin (total bilirubin >1.9mg/dL)
   6. Abdominal or pelvic pain
   7. Abdominal or pelvic mass
   8. Hepatomegaly
   9. Ascites
   10. Bowel obstruction by KUB
   11. New onset of renal insufficiency [One of the following]
       a. BUN >20mg/dL
       b. Creatinine >1.5mg/dL
   12. New onset of hydronephrosis documented on ultrasound

XLIII. Bladder cancer [One of the following]
A. Initial staging if muscle invasion on biopsy
B. Following completion of treatment and bladder in place
   1. Every 3-6 months for 2 years
C. Following completion of treatment including cystectomy
   1. Every 3-12 months for 2 years
D. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Jaundice
   4. Abdominal or pelvic pain
   5. Abdominal or pelvic mass
   6. Hepatomegaly
   7. Ascites
   8. Hematuria
   9. Bowel obstruction by KUB
   10. Rectal bleeding
   11. Vaginal bleeding
   12. Hematuria
   13. New onset of renal insufficiency [One of the following]
       a. New onset of BUN >20mg/dL
       b. New onset of creatinine >1.5mg/dL
   14. New onset of hydronephrosis documented on ultrasound
XLIV. **New bone lesion suspicious for a metastatic lesion with no known cancer**  
[Both]  
A. X-ray demonstrating a bone lesion suspicious for a metastatic lesion  
B. 40 years of age or older

XLV. **Endometrial cancer**  
[One of the following]  
A. Incomplete surgical staging  
B. Follow up as clinically indicated

XLVI. **Uterine leiomyosarcoma**  
[One of the following]  
A. Known or suspected extra uterine disease  
B. Follow up as clinically indicated

XLVII. **Malignant mesothelioma**  
A. Initial staging

XLVIII. **Non-small cell lung cancer (CT of the abdomen, CPT codes 74150, 74160 or 74170, is the appropriate study.)**  
[One of the following]  
A. Initial staging may be approved along with PET/CT for initial staging  
B. Rising CEA (non smoker >2.5; smoker >5.0)  
C. Rising liver function tests [One of the following]  
   1. Bilirubin >1.9 mg/dL  
   2. Alkaline phosphatase > 140 IU/L  
D. New or worsening signs or symptoms or clinical data [One of the following]  
   1. Anorexia  
   2. Weight loss  
   3. Abdominal or pelvic pain  
   4. Abdominal or pelvic mass  
   5. Hepatomegaly  
   6. Ascites  
   7. Bowel obstruction by KUB  
   8. Hematuria  
   9. New onset of hydronephrosis documented on ultrasound  
E. Surveillance with no clinical or radiographic evidence of disease [One of the following]  
   1. Every 6-12 months for 2 years  
   2. Every 6 months for years 3-5  
   3. Annually after 5 years

XLIX. **Small cell lung cancer (CT of the abdomen, CPT codes 74150, 74160 or 74170, is the appropriate study.)**  
[One of the following]  
A. Initial staging may be approved along with PET/CT for initial staging  
B. Rising CEA (non smoker >2.5; smoker >5.0)  
C. Rising liver function tests  
D. Surveillance with no clinical or radiographic evidence of disease [One of the following]  
   1. Every 3-4 months for 2 years  
   2. Every 6 months for years 3-5  
   3. Annually after 5 years
E. Change on recent chest x-ray
F. New or worsening signs or symptoms or clinical data [One of the following]
1. Anorexia
2. Weight loss
3. Abdominal or pelvic pain
4. Abdominal or pelvic mass
5. Hepatomegaly
6. Ascites
7. Bowel obstruction by KUB
8. Hematuria
9. New onset of hydronephrosis documented on ultrasound

References:

1. Local Coverage Determination (LCD) for Radiology: Computed Tomography of the Abdomen and Pelvis (L30048), Cahaba Government Benefit Administrators, LLC, Alabama. [URL]

2. Local Coverage Determination (LCD) for Radiology: Computed Tomography of the Abdomen and Pelvis (L30048), Cahaba Government Benefit Administrators, LLC, Georgia. [URL]

3. Local Coverage Determination (LCD) for Radiology: Computed Tomography of the Abdomen and Pelvis (L30048), Cahaba Government Benefit Administrators, LLC, Tennessee. [URL]


I. New hepatic, renal, pancreatic or other abdominal mass\textsuperscript{1-3}
   A. New mass on other imaging, further characterization required

II. Patient with known cancer \textsuperscript{4-51} (CT is the preferred modality. MRI should only be performed if there is an absolute contraindication to CT except for children and women of child bearing age who will have repeat imaging.) See also indications III, VI, IX, XII, and XX-XLIII.
   A. Initial staging of a primary cancer prior to treatment
      1. Lymphoma including primary CNS lymphoma (A separate diagnostic CT is not medically necessary if it was done as part of the PET/CT.)
      2. Renal cell carcinoma
      3. Hepatoma or hepatocellular carcinoma, or gallbladder carcinoma or cholangiocarcinoma – CT of the abdomen is preferred. (CPT codes 74150 or 74160 or 74170)
      4. Adrenal carcinoma CT of the abdomen (CPT codes 74150 or 74160 or 74170) is the correct study
      5. Pancreatic carcinoma
      6. Leiomyosarcoma of the uterus
      7. Endometrial carcinoma
      8. Testicular carcinoma
      9. Ovarian carcinoma
      10. Gastric carcinoma
      11. GIST
      12. Colon carcinoma
      13. Rectal carcinoma
      14. Anal carcinoma
      15. Esophageal carcinoma
      16. Neuroendocrine tumors of the abdomen including but not limited to carcinoid, islet cell tumors of the pancreas, pheochromocytoma, paraganglioma, adrenal tumors, poorly differentiated or high grade anaplastic or small cell carcinoma other than lung
      17. Bladder cancer with muscle invasion on biopsy
      18. Bone lesion on radiographs suggestive of metastatic disease
      19. Breast cancer (This may be done in addition to PET/CT when that study is indicated.)
         a. Clinical stage I – IIB [One of the following]
            i. Alkaline phosphatase >120 U/L
            ii. Total bilirubin >1.9 mg/L
            iii. GGT > 42 IU/L
            iv. AST >40 IU/L
            v. Palpable abdominal mass
vi. Abdominal pain
b. Clinical stage IIIA or higher
20. Non-small cell lung cancer in addition to PET/CT if a tissue diagnosis has been established
21. Small cell cancer of the lung

B. Surveillance in asymptomatic individual with no known metastatic disease and no symptoms or signs of relapse [One of the following]
1. Colorectal cancer – see XXIV below
2. Anal carcinoma – see XXXVIII
3. Rectal cancer – see XXV below
4. Hodgkin’s disease – see XXXIV below
5. Follicular, MALT, nodal marginal cell, mantle cell lymphoma, Burkitt’s lymphoma – see XXXV below
6. Renal cell cancer or kidney cancer – see XXI below
7. Bladder cancer – see XXXIX below
8. Soft tissue sarcoma involving the retroperitoneum, pelvis or abdomen – see XXXVI below
9. Pancreatic cancer – see IX below
10. Bone sarcoma imaging of the primary site with same technique as was used for the initial workup (Osteogenic sarcoma, Ewing’s sarcoma, chondrosarcoma, spindle cell sarcoma of bone, chordoma and other bone tumors) [One of the following]
a. May be as frequent as often as every 6 weeks- 3 months for 2 years
b. Every 2-4 months for the next 2 years
c. Every 6 months for years 5-10
d. Every 6-12 thereafter
11. GIST – see XXXVI below
12. Ovarian cancer – see XXVI below
13. Hepatoma or hepatocellular carcinoma – see XXXI below
14. Neuroendocrine tumors – see XXIX and XXX below
15. Breast cancer – see XXII below
16. Cervical cancer – see XXIII below
17. Gastric cancer – see XXVIII below
18. Esophageal cancer – see XXVII below
19. Gallbladder cancer – see XXXII below
20. Cholangiocarcinoma – see XXXIII below
21. Endometrial cancer – see XL below
22. Uterine sarcoma – see XLII below
23. Testicular – see XXXVII below

C. New or worsening clinical data reported [One of the following] – CT of the abdomen and pelvis is the correct study. (CPT codes 74176 or 74177 or 74178)
1. Anorexia
2. Weight loss
3. Abdominal or pelvic pain
4. Abdominal or pelvic mass
5. Hepatomegaly
6. Ascites
7. Bowel obstruction by KUB
8. Pelvic or lower extremity pain
9. Leg weakness or numbness
10. Hematuria
11. Rectal bleeding
12. Vaginal bleeding
13. New or worsening hydronephrosis documented on ultrasound
14. New onset of renal insufficiency [One of the following]
   a. New onset of BUN >20 mg/dL
   b. New onset of creatinine >1.5 mg/dL
   c. Lab values elevated/increasing [One of the following]
      i. Elevated CEA (>2.5 in non smoker and >5.0 in smoker) on two consecutive tests
   d. Rising bilirubin (Total bilirubin >1.9 mg/dL)
   e. Alkaline phosphatase > 140 IU/L
   f. Rising CA 19-9 (pancreatic cancer) >120 U/ml
   g. Rising CA125 >35 U/ml
   h. Rising PSA on 2 consecutive tests >4 ng/ml
      i. New onset of BUN >20 mg/dL
      j. New onset of creatinine >1.5 mg/dL

III. Known or suspected adrenal disease or mass including adrenal carcinoma
     [One of the following] 37,51
     Note: With suspected pheochromocytoma, if meets criteria, can also approve MRI pelvis as
     uncommon presentation of pheochromocytoma is extra-adrenal, including the bladder.
     A. Suspected pheochromocytoma [One of the following]
        1. VMA or metanephrine > 7 mg/24 hr
        2. Catecholamines >normal
     B. Suspected adrenal cortical tumor [One of the following]
        1. 24 hr urine free cortisol >100 mcg/24 hr
        2. No suppression by dexamethasone
     C. Suspected aldosteronoma [One of the following]
        1. Hypertension with systolic >160 and diastolic > 100
        2. Hypertension that is drug resistant
        3. Spontaneous or diuretic induced hypokalemia
           a. Serum potassium <3.5 mEq/L on 2 different samples
        4. Plasma aldosterone to rennin ratio > 20
     D. Incidental finding with no history of malignancy 1-4 cm in size [One of the following]
        1. No prior non contrast CT performed
        2. Follow up 12 months from the original non contrast CT/MRI
     E. Incidental finding with no history of malignancy > 4 cm in size
     F. Personal history of malignancy
    G. Suspicion of adrenal carcinoma and no recent CT/MRI scan [One of the following]
       1. Non functioning adrenal mass > 4 cm on prior ultrasound and no CT/MRI performed
       2. Cushing’s syndrome
       3. Hirsutism in women
       4. Oligomenorrhea
       5. Deepening voice in women
       6. Gynecomastia
7. Testicular atrophy
8. Elevated DHEA-S
9. Hypertension
10. Hypokalemia - serum potassium < 3.5 mEq/L
11. Aural temperature > 38.3°C or > 100.9°F
12. Weight loss
13. Abdominal pain and tenderness
14. Palpable abdominal mass

H. Follow up of treated adrenal carcinoma
   1. Follow up immediately after completion of treatment to establish a new baseline
   2. Every 3-6 months

IV. Hemochromatosis [One of the following]^{52,53}
   A. Elevated iron saturation
   B. Elevated serum ferritin

V. Evaluation of cirrhosis and portal hypertension [One of the following]^{54-56} (CT is the preferred study)
   A. Hepatitis B or C
      1. Ultrasound demonstrating a liver mass > 1 cm
   B. Cirrhosis
      1. Planned TIPS (transjugular intrahepatic portosystemic shunt – relatively non-invasive procedure for portal hypertension)

VI. Screening for hepatoma or hepatocellular carcinoma^{41,57-62}
   A. Hepatitis B
   B. Cirrhosis with histologic diagnosis [One of the following]
      1. Alcoholic cirrhosis
      2. Hemochromatosis
      3. Fatty liver
      4. Biliary cirrhosis stage 4
      5. Hepatitis B or C
   C. Prior ultrasound showed a mass
      1. MRI showed a lesion under 1 cm repeat MRI every 3-6 months if stable
   D. MRI shows mass between 1-2 cm repeat MRI in 3 months if no biopsy performed
   E. Negative ultrasound with elevated or rising AFP repeat CT or MRI of the liver every 3 months

VII. Known or suspected pancreatitis or pancreatic pseudocyst [One of the following]^{63-68} (CT is the preferred study.)
   A. Suspected acute pancreatitis, with abdominal pain which may radiate to the back (Exams may be repeated at intervals if there is no improvement on therapy, or signs of complications are present.) [One of the following]
      1. Amylase > 3 times the upper normal laboratory value
      2. Lipase > 3 times the upper normal laboratory value
   B. Known pancreatitis with one of the following allows for repeat exams if present
      1. Hemodynamic instability
a. Falling hematocrit
b. Falling blood pressure
2. Aural temperature >38.3°C or 100.9°F
3. Retroperitoneal air on prior CT
4. Positive blood culture
5. Signs of peritonitis (rebound tenderness)
6. Poor oxygen saturation, signs of ARDS (adult respiratory distress syndrome)
7. Signs of renal failure
8. Initial clinical state unimproved after 5 days of therapy

C. Suspected pancreatic pseudocyst [Both]
   1. History [One of the following]
      a. Acute pancreatitis with onset at least 4 wks earlier
      b. Pancreatitis secondary to trauma (time irrelevant)
      c. Chronic pancreatitis
   2. Clinical findings [One of the following]
      a. Abdominal/back pain
      b. Abdominal tenderness
      c. Abdominal mass

D. Evaluation of known pancreatic pseudocyst [One of the following]
   1. Periodic evaluation for change in size
   2. New or worsening clinical findings

E. Pancreatic mass on prior US or CT which requires further clarification

VIII. Chronic pancreatitis with history of recurrent pancreatitis and abdominal pain
      (not helpful for early diagnosis; only confirmation of diagnosis and surgical planning)\textsuperscript{69,70}

IX. Pancreatic cancer or mass\textsuperscript{23-25,50} [One of the following]
   A. Symptoms [One of the following]
      1. Weight loss
      2. Mid-epigastric pain which may radiate to the back
   B. Elevated tumor markers [One of the following]
      1. CA19-9 (>40Ku/L)
      2. CEA > 2.5 in non-smoker
      3. CEA > 5.0 in a smoker
   C. Prior imaging with dilatation of the bile duct and/or pancreatic duct (US, ERCP, MRCP)
      Pancreatic mass on recent prior imaging for “pancreatic protocol”
   D. Initial staging of pancreatic cancer if not already performed
   E. Painless jaundice (See XVIII below.)
   F. Follow up immediately after completion of treatment
   G. Follow up [One of the following]
      1. Every 3-6 months for 2 years
      2. Annually after 2 years
   H. New or worsening clinical data reported [One of the following]
      1. Anorexia
2. Weight loss
3. Abdominal or pelvic pain
4. Abdominal or pelvic mass
5. Hepatomegaly
6. Ascites
7. Bowel obstruction by KUB
8. New onset of hydronephrosis documented on ultrasound
9. Lab values elevated/increasing
   a. Rising CEA (>2.5 in non smoker or >5.0 in smoker)
   b. Rising bilirubin (Total bilirubin >1.9mg/dL)
   c. Alkaline phosphatase >140U/L
   d. Rising CA 19-9 >35 U/mL
   e. New onset of BUN >20mg/dL

X. As an alternative to CT
   A. Anticipated lifelong abdominal exams (long-term follow up of one disease process)
   B. Allergy to iodinated contrast material in patient meeting guidelines for abdominal CT

XI. MR cholangiopancreatography (MRCP) [One of the following]71,72
   A. Suspected obstruction to flow of bile [One of the following]
      1. Biliary duct dilatation on US or other imaging
      2. Jaundice direct bilirubin >0.4 mg/dL
      3. Acalculous cholecystitis
   B. Pancreatitis with abdominal pain which may radiate to the back [One of the following]
      1. Amylase > 3 times the upper normal laboratory value
      2. Lipase > 3 times the upper normal laboratory value
      3. Recurrent or chronic without obvious cause
      4. Occurring after trauma, surgery or instrumentation (including prior cholecystectomy or ERCP)
      5. Acute biliary pancreatitis
   C. Evaluation of pseudocyst detected on prior imaging (The status of the pancreatic duct is a key determinant of how a pseudocyst is treated. If the pancreatic duct is intact, percutaneous drainage is likely to be effective. If the duct is disrupted percutaneous drainage will not provide definitive therapy and will convert the pseudocyst to a fistula.)
   D. Tumor
      1. Evaluation of pancreatic or biliary ducts with known tumors of the pancreas, liver or suspected tumors of the biliary or pancreatic ducts on prior imaging
      2. Biliary cystadenoma or cystadenocarcinoma
   E. Chronic pancreatitis with history of recurrent pancreatitis and abdominal pain which may radiate to the back [One of the following]
      1. Pathological secretin test
      2. Abnormal glucose tolerance test
      3. Steatorrhea
      4. Pancreatic calcifications on other imaging study
      5. Recurrent or persistent pseudocysts
   F. Unsuccessful ERCP
G. Suspected congenital anomaly of the pancreaticobiliary tract such as but not limited to pancreas divisum, choledochal cyst, aberrant ducts
H. Altered biliary tract anatomy that precludes ERCP such as biliary enteric anastomosis, or gastrectomy

XII. Suspected or known neuroendocrine tumor including carcinoid, pheochromocytoma, paraganglioma, islet cell tumor of the pancreas, poorly differentiated or high grade or aggressive small cell tumor other than lung
[One of the following]37,73-75
A. Carcinoid [One of the following]
   1. New diagnosis [One of the following]
      a. Elevated urine 5HIAA >15mg/24hr
      b. Elevated chromogranin A (CgA) >39ng/L
      c. Elevated substance P >270 ng/L or pg/mL
      d. Elevated gastrin >100pg/mL
      e. Elevated serotonin >330mcmol/L
   2. Known diagnosis post resection [One of the following]
      a. 3-12 months post resection
      b. Repeat scan if rising tumor markers such as 5HIAA, chromogranin, serotonin, gastrin or substance P
B. Islet cell tumor of the pancreas initial or suspected recurrence [One of the following]
   1. Gastrinoma or Zollinger Ellison syndrome [One of the following]
      a. Elevated serum gastrin >100pg/m
      b. Positive secretin test
      c. May also present with reflux and peptic ulcers
      d. Prominent gastric folds on endoscopy
   2. Insulinoma [One of the following]
      a. Elevated serum C peptide
      b. Fasting blood glucose of <40mg/dL
      c. Elevated serum insulin >2.0ng/ml
   3. Glucagonoma [One of the following]
      a. Elevated serum glucagon>100pg/ml
   4. VIPoma
      a. Elevated vasoactive intestinal polypeptide (VIP) >70pg/ml
   5. Somatostatinoma
      a. Elevated somatostatin
C. Pheochromocytoma [One of the following]
   1. Elevated urine VMA or metanephrine >7mg/24hr
   2. Elevated catecholamines
D. Restaging after completion of treatment for any islet cell tumor to establish a new baseline
E. Surveillance of islet cell tumors [One of the following]
   1. Every 3-12 months
   2. Repeat scan if rising tumor markers as indicated in A-C

XIII. Aneurysm76-83 [One of the following] (CTA of the abdomen and pelvis is preferred.)
A. Suspected rupture of AAA with new onset of mid abdominal or back pain [Both]
   1. New onset of mid-abdominal or back pain
   2. Clinical findings [One of the following]
      a. Pulsatile or expansile mass
      b. Abnormal X-ray or US findings suggesting aortic aneurysm
      c. Falling blood pressure

B. Known AAA [One of the following]
   1. Periodic follow-up of an asymptomatic known AAA will be according to the following schedule if there is an inadequate ultrasound and there has not been a surgical repair
      a. 2.5 - 2.9 cm every 5 years
      b. 3.0 - 3.4 cm every 3 years
      c. 3.5 - 3.9 cm every 2 years
      d. 4.0 - 4.4 cm every year
      e. 4.5 - 4.9 cm every 6 months
      f. 5.0 - 5.5 cm every 3 - 6 months
      g. New onset of pain

C. Postoperative evaluation following repair including surgery or endovascular repair (stent graft) [One of the following]
   1. 1 month after repair
   2. 3 months after repair
   3. 6 months after repair
   4. Annually after repair
   5. Suspicion of endoleak

D. Aneurysm of one other intraabdominal artery detected on other imaging

E. Vascular insufficiency of the bowel (suspicion of) [Both]
   1. Abdominal pain often starting as periumbilical and often out of proportion to exam findings
   2. Other clinical findings [One of the following]
      a. Leukocytosis, WBC > 11,500/cu.mm
      b. Stool positive for occult blood
      c. Nausea, vomiting or diarrhea
      d. History of abdominal angina (pain after eating for approximately 3 hours)

F. Planning for endovascular or surgical repair

G. Screening for aneurysm (Ultrasound screening is the appropriate study. CT, CTA, MRI, or MRA should only be used if the aorta cannot be visualized adequately on US and this must be documented with the US report.) [One of the following]
   1. Pulsatile mass with non diagnostic ultrasound
   2. History of first degree relative with an abdominal aortic aneurysm and non interpretable ultrasound
   3. Male age 65-75 with a history of smoking

H. Pulsatile mass on abdominal, vaginal or rectal examination

XIV. Suspected dissection of the aorta [One of the following]
   A. Unequal blood pressure in the arms
   B. Rapid onset of “ripping, tearing, searing” severe chest or upper back or abdominal pain
   C. Syncope and chest pain
   D. Shortness of breath
   E. CVA or stroke
F. Loss of pulses
G. Aortic insufficiency murmur
H. Marfan's syndrome
I. Known aortic valve disease
J. Follow up of known dissection [One of the following]
   1. 1 month after repair
   2. 3 months after repair
   3. 6 months after repair
   4. 12 months after repair
   5. Annually after 12 months
K. New symptoms after repair [One of the following]
   1. Unequal blood pressure in the arms
   2. Rapid onset of “ripping, tearing, searing, or sharp” severe chest or upper back or abdominal pain
   3. Syncope and chest pain
   4. Shortness of breath
   5. CVA or stroke
   6. Loss of pulses
   7. Aortic insufficiency murmur

XV. Soft tissue mass of the abdominal wall\textsuperscript{87} (CT is preferred.)
A. Abdominal x-ray non-diagnostic

XVI. MR enterography [One of the following]\textsuperscript{88-90}
A. Bowel obstruction
B. Celiac disease
C. Polyposis syndromes
D. Small bowel tumor
E. Suspected Crohn's disease [One of the following]
   1. Aural temperature >38.3°C or 100.9°F
   2. Diarrhea
   3. Weight loss
   4. Fatigue
   5. Abdominal pain
   6. Perianal fistula or fissure
   7. Enterovesical fistula
   8. Enterovaginal fistula
   9. Enterocutaneous fistula
   10. Right lower quadrant tenderness
F. Complications of Crohn's disease [One of the following]
   1. Suspected abscess, fistula or stricture
      a. Clinical findings [One of the following]
         i. Mass on abdominal, pelvic or rectal exam
         ii. Aural temperature >38.3°C or 100.9°F
         iii. Leukocytosis, WBC >11,500/cu.mm
         iv. Abdominal tenderness
v. Guarding
vi. Rebound
vii. Diarrhea

2. Follow up during or after treatment [One of the following]
a. Condition unimproved or worsening during treatment
b. Routine follow-up study after treatment, including evaluation for removal of drain

XVII. Cryptorchidism (undescended testicle) [Both]\textsuperscript{91-93}
A. Testicle not palpable
B. Abdominal and pelvic US nondiagnostic for undescended testicle

XVIII. Evaluation of painless jaundice demonstrated by either direct bilirubin >.2 or total bilirubin >1.9, a negative or non diagnostic ultrasound and one of the below\textsuperscript{25} (MRI without and with contrast including MRCP is preferred.)

XIX. Unilateral leg edema with venous Doppler excluding venous insufficiency or varicose veins [One of the following]\textsuperscript{94}
A. Acute unilateral edema [One of the following]
   1. D-dimer < 500 ng/ml and low suspicion of deep venous thrombosis
   2. No evidence of ruptured Baker's cyst or injury to the gastrocnemius muscle
B. Chronic unilateral edema
   1. No evidence of reflex sympathetic dystrophy

XX. New renal mass suspected or detected prior imaging (For renal cell cancer see XXI below.) [One of the following]\textsuperscript{10} (CT is preferred.)
A. Initial evaluation of mass seen on prior imaging with renal protocol
B. Cystic or solid mass detected on ultrasound
   1. Simple cyst confirmed on prior CT to be simple cyst or Bosniak class I cyst – no further imaging is indicated
C. Bosniak Class II cyst on prior CT (or MRI)
   1. Every 6 months for 3 years and if stable no further imaging

XXI. Renal cell or kidney cancer proven by biopsy follow up of known cancer [One of the following]\textsuperscript{9-11,40}
A. Initial staging
B. Follow up 2-6 months after completion of treatment
C. Additional follow up as clinically indicated

XXII. Breast cancer\textsuperscript{30} [One of the following]
A. Initial staging [One of the following]
   1. Clinical stage I –IIB [One of the following]
      a. Alkaline phosphatase >140 U/L
      b. Total bilirubin >1.9 mg/L
      c. GGT > 42IU/L
      d. AST >40IU/L
e. Palpable abdominal mass
f. Abdominal pain
2. Clinical stage IIIA or higher
B. Any evidence of breast cancer recurrence after treatment
C. Known metastatic disease with evidence of progression
D. Known metastatic disease following completion of treatment to establish new baseline
E. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. New onset of hydronephrosis documented on ultrasound
   9. Lab values elevated/increasing
      a. Rising CEA (>2.5 in non smoker and >5.0 in smoker)
      b. Rising bilirubin (Total bilirubin >1.9mg/dL)
      c. Alkaline phosphatase > 125 U/L
      d. New onset of BUN >20mg/dL

XXIII. Cervical cancer31 [One of the following]
   A. Initial staging for Stages IB2 and IIA2, IIB, IIIA, IVA
   B. Restaging after completion of therapy
   C. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Bowel obstruction by KUB
      8. Rectal bleeding
      9. Vaginal bleeding
      10. Hematuria
      11. New onset of hydronephrosis documented on ultrasound
      12. Lab values elevated/increasing
         a. New onset of BUN >20mg/dL
         b. New onset of creatinine >1.5mg/dL

XXIV. Colon cancer32 [One of the following]
   A. Initial staging
   B. Following treatment and no known metastases annually for 3-5 years
   C. Known metastases – stable with no clinical change or laboratory changes such as rising tumor markers or elevated liver function tests [One of the following]
      1. Every 3-6 months for 2 years
2. Every 6-12 months for up to 5 years

D. Rising CEA on 2 consecutive tests [One of the following]
1. >2.5 in non smokers
2. >5.0 in smokers

E. New or worsening clinical data reported [One of the following]
1. Anorexia
2. Weight loss
3. Abdominal or pelvic pain
4. Abdominal or pelvic mass
5. Hepatomegaly
6. Ascites
7. Bowel obstruction by KUB
8. Rectal bleeding
9. Vaginal bleeding
10. Hematuria
11. New onset of hydronephrosis documented on ultrasound
12. Lab values elevated/increasing [One of the following]
   a. Rising CEA (>2.5 in non smoker and >5.0 in smoker)
   b. Rising bilirubin (Total bilirubin >1.9mg/dL)
   c. Alkaline phosphatase > 125 U/L
   d. Rising CA 19-9 >35 U/mL
   e. New onset of BUN >20mg/dL
   f. New onset of creatinine >1.5mg/d

XXV. Rectal cancer [One of the following]

A. Initial staging
B. Following treatment with no known metastases and stable [One of the following]
   1. Annually for 3-5 years
   2. Rising CEA (> 2.5 non smokers; > 5.0 smokers) If negative repeat in 3 months
C. Known non resectable metastases
   1. Following chemotherapy aimed at conversion to resectable disease may be done every 2 months to evaluate resectability
D. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. Rectal bleeding
   9. Vaginal bleeding
   10. Hematuria
   11. New onset of hydronephrosis documented on ultrasound
   12. Lab values elevated/increasing [One of the following]
      a. Rising CEA (>2.5 in non smoker and >5.0 in smoker)
      b. Alkaline phosphatase > 125 U/L
c. Rising bilirubin (Total bilirubin >1.9mg/dL)
d. Rising CA 19-9 >35 U/mL
e. New onset of BUN >20mg/dL
f. New onset of creatinine >1.5mg/dL

XXVI. Ovarian cancer, fallopian tube cancer and primary peritoneal cancer\textsuperscript{7,34} [One of the following]
A. Initial staging
B. Following treatment and stable
C. Rising CA-125 with or without prior chemotherapy
D. Clinical relapse with or without prior chemotherapy
E. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. Rectal bleeding
   9. Vaginal bleeding
   10. Hematuria
   11. New onset of hydronephrosis documented on ultrasound
   12. New onset of renal insufficiency [One of the following]
      a. BUN >20mg/dL
   13. Creatinine >1.5mg/dL
   14. Lab values elevated/increasing
      a. Rising CEA (>2.5 in non smoker and >5.0 in smoker)
      b. Rising bilirubin (Total bilirubin >1.9mg/dL)
      c. Alkaline phosphatase > 140 U/L
      d. Rising CA 19-9 > 35 U/mL
      e. New onset of BUN >20mg/dL
      f. New onset of creatinine >1.5mg/dL

XXVII. Esophageal cancer\textsuperscript{35} [One of the following]
A. Initial staging
B. Prior to chemoradiation if PET/CT not done
C. Clinical recurrence
D. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
8. Rectal bleeding
9. Vaginal bleeding
10. Hematuria
11. New onset of hydronephrosis documented on ultrasound
12. Lab values elevated/increasing
   a. Rising bilirubin (total bilirubin >1.9mg/dL)
   b. Alkaline phosphatase > 140 U/L
   c. New onset of BUN >20mg/dL
   d. New onset of creatinine >1.5mg/dL

**XXVIII. Gastric (stomach) cancer** [One of the following]
A. Initial staging
B. Following completion of treatment
C. Clinical recurrence
D. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. Rectal bleeding
   9. Vaginal bleeding
   10. Hematuria
   11. New onset of hydronephrosis documented on ultrasound
   12. New onset of renal insufficiency [One of the following]
      a. BUN >20mg/dL
      b. Creatinine >1.5mg/dL
   13. Lab values elevated/increasing
      a. Rising bilirubin (total bilirubin >1.9mg/dL)
      b. Alkaline phosphatase > 140 U/L
      c. BUN >20mg/dL
      d. Creatinine >1.5mg/dL

**XXIX. Carcinoid** [One of the following]
A. Initial staging
B. Following completion of therapy to establish a new baseline
C. Surveillance [One of the following]
   1. Carcinoid tumors larger than 2 cm or with incomplete resection and are stable with no evidence of disease (CT of the abdomen and pelvis is preferred.)
   2. Every 3-12 months after resection
   3. Every 6-12 months thereafter
D. Abnormal laboratory tests suggesting recurrence [One of the following]
   1. Elevated urine 5HIAA >15mg/24hr
   2. Elevated chromogranin A (CgA) >39ng/L
3. Elevated substance P >270 ng/L or pg/mL

XXX. Islet cell tumor of the pancreas\textsuperscript{37} [One of the following]
A. Initial staging
B. Following completion of therapy to establish a new baseline
C. Surveillance with no evidence of disease [One of the following]
   1. Every 3-12 months after resection
   2. Every 6-12 months thereafter
D. Clinical evidence of recurrence [One of the following]
   1. Gastrinoma or Zollinger Ellison syndrome
   2. Positive secretin test
   3. May also present with reflux and peptic ulcers
   4. Prominent gastric folds on endoscopy
   5. Insulinoma [One of the following]
      a. Elevated serum C peptide
      b. Fasting blood glucose of <40mg/dL
   6. Glucagonoma [one]
      a. Elevated serum glucagon>100pg/ml
      b. Weight loss
   7. VIPoma
      a. Elevated vasoactive intestinal polypeptide (VIP) >70pg/ml
   8. Somatostatinoma
      a. Elevated somatostatin
   9. Pheochromocytoma [One of the following]
      a. Elevated urine VMA or metanephrine >7mg/24hr
      b. Elevated catecholamines
   10. Surveillance of one neuroendocrine tumor [One of the following]
       a. Scan every 3-6 months f than 5 years
       b. Repeat scan if rising tumor markers as indicated in A-C
   11. Monitoring during treatment
       a. Every 3 months during treatment with chemotherapy or biological therapy

XXXI. Hepatoma or hepatocellular carcinoma\textsuperscript{15,41} [One of the following]
A. Initial staging
B. Following treatment one time and then every 3-6 months for 2 years
C. After 2 years every 6-12 months
D. New onset of rising AFP
E. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. New onset of renal insufficiency [One of the following]
a. BUN >20mg/dL  
   b. Creatinine >1.5mg/dL  
9. New onset of hydronephrosis documented on ultrasound  
10. Lab values elevated/increasing  
   a. Alkaline phosphatase > 140 U/L  
   b. Rising bilirubin (Total bilirubin >1.9mg/dL)  
   c. Rising AFP

XXXII. Gallbladder cancer41 [One of the following]
A. Postoperative scan to establish a new baseline  
B. Repeat CT scan every 6 months for 2 years  
C. New or worsening clinical data reported [One of the following]  
   1. Anorexia  
   2. Weight loss  
   3. Abdominal or pelvic pain  
   4. Abdominal or pelvic mass  
   5. Hepatomegaly  
   6. Ascites  
   7. Bowel obstruction by KUB  
8. Lab values elevated/increasing  
   a. Rising bilirubin (total bilirubin >1.9mg/dL)  
   b. Alkaline phosphatase > 140IU/L

XXXIII. Cholangiocarcinoma41 [One of the following]
A. Initial staging  
B. Completion of therapy then every 6 months for 2 years  
C. New or worsening clinical data reported [One of the following]  
   1. Anorexia  
   2. Weight loss  
   3. Abdominal or pelvic pain  
   4. Abdominal or pelvic mass  
   5. Hepatomegaly  
   6. Ascites  
   7. Bowel obstruction by KUB  
8. Lab values elevated/increasing  
   a. Alkaline phosphatase > 140 U/L  
   b. Rising bilirubin (total bilirubin >1.9mg/dL)

XXXIV. Hodgkin's lymphoma42 [One of the following]
A. Initial staging including CNS lymphoma (A separate diagnostic CT is not medically necessary if it was done as part of the PET/CT.)  
B. Restaging while on treatment should be done with PET/CT  
C. After treatment with radiation therapy restage with either CT or PET/CT if last PET scan was positive  
D. Follow up after completion of radiation therapy treatment  
E. Scan every 6-12 months for 2-5 years
F. Annual scan if there is increased risk for lung cancer (This is optional if none of the factors below are present.) [One of the following]
   1. Treatment with radiation therapy
   2. Treatment with nonalkylating agent chemotherapy
   3. Smoking history

G. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Night sweats
   8. Aural temperature > 38.3°C or > 100.9°F
   9. Bowel obstruction by KUB
   10. New onset of renal insufficiency [One of the following]
       a. BUN >20mg/dL
       b. Creatinine >1.5mg/dL

   11. Lab values elevated/increasing
       a. Rising bilirubin (total bilirubin >1.9mg/dL)
       b. Alkaline phosphatase > 140 IU/L
       c. BUN >20mg/dL
       d. Creatinine >1.5mg/dL

XXXV. Non-Hodgkin’s lymphoma
    (follicular lymphoma, marginal zone lymphoma, MALT lymphoma, mantle cell lymphoma, diffuse large B-cell lymphoma, Burkitt’s lymphoma, peripheral T cell lymphoma, mycosis fungoides, hairy cell leukemia, post-transplant lymphoproliferative disorders, CLL/SLL) [One of the following]
   A. Initial staging in addition to PET/CT
   B. Follow up after completion of treatment to establish a new baseline
   C. Surveillance
      1. Not more frequently than every 6 months for the first 2 years and not more frequently than annually thereafter
   D. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Night sweats
      8. Aural temperature > 38.3°C or > 100.9°F
      9. Hydronephrosis documented on ultrasound
      10. Bowel obstruction by KUB
      11. Lab values elevated/increasing
a. Rising bilirubin (total bilirubin >1.9mg/dL)
b. Alkaline phosphatase >140 IU/L
c. BUN >20mg/dL
d. Creatinine >1.5mg/dL

XXXVI. Soft tissue sarcoma[^18,44] [One of the following]
A. Myxoid/round cell liposarcoma (CT of the abdomen and pelvis is preferred for initial staging.)
B. Retroperitoneal/intra-abdominal (includes GIST, desmoid, aggressive fibromatosis and other sarcomas) (CT of the abdomen and pelvis is preferred for initial staging.) [One of the following]
   1. Initial staging
   2. Follow up [One of the following]
      a. Following completion of treatment to establish a new baseline (one time)
      b. Every 3-6 months for 2-3 years (for GIST tumor every 3-6 months for 3-5 years)
      c. Every 6 months for next 2 years
      d. Annually after 4-5 years

XXXVII. Testicular cancer[^45] [One of the following]
A. Pure seminoma (CT of the abdomen and pelvis is preferred for initial staging.) [One of the following]
   1. Initial staging
   2. Follow up after treatment to establish a new baseline
   3. Surveillance of Stage IA and IB tumors not treated with chemotherapy or radiation therapy [One of the following]
      a. Every 6 months for 1-2 years
      b. Every 6-12 months for year 3
      c. Annually for years 4 and 5
   4. Stage IA and IB tumors treated with single agent
      a. Annual CT of the abdomen and pelvis for 1-3 years
   5. Stage IA, IB and I S treated with radiation
      a. Annual CT of the abdomen and pelvis for 1-3 years
   6. Stage IIA and IIB following completion of radiation therapy [One of the following]
      a. Every 6-12 months for 1-2 years
      b. Annually for year 3
   7. Stage IIB, IIC and III after chemotherapy
      a. Following completion of therapy [One of the following]
         i. No residual mass or mass less than or equal to 3cm with normal AFP, beta HCG and LDH may be repeated at
         ii. Residual mass > 3cm and normal AFP, beta HCG and LDH following a PET scan 6 weeks after completion of therapy if there is activity repeat the CT of the abdomen and pelvis following either retroperitoneal lymph node dissection or second line chemotherapy or RT 3-6 months after last treatment
   B. Non seminoma (CT of the abdomen and pelvis is preferred for initial staging.) [One of the following]
   1. Stage IA, IB if surveillance only [One of the following]
      a. Every 3-4 months for 1st year
b. Every 4-6 months for 2nd year
c. Every 6-12 months for 3rd and 4th year
d. Annually for 5th year
e. Every 1-2 years

2. Stage IB, IIA and IIB after chemotherapy
   a. Follow up after treatment to establish a new baseline
   b. Negative AFP with or without a mass [One of the following]
      i. Every 6 months for 1 year
      ii. Every 6-12 months for the 2nd year
      iii. Annually years 3-5

C. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Jaundice
   4. Abdominal or pelvic pain
   5. Abdominal or pelvic mass
   6. Hepatomegaly
   7. Ascites
   8. Bowel obstruction by KUB
   9. Rising AFP
   10. Rising beta HCG
   11. Rising LDH
   12. New onset of hydronephrosis documented on ultrasound
   13. New onset of renal insufficiency [One of the following]
      a. BUN >20mg/dL
      b. Creatinine >1.5mg/dL

XXXVIII. Anal cancer

A. Initial staging
B. After completion of treatment
C. Surveillance after first post treatment scan [One of the following]
   1. Annual CT scan of the abdomen and pelvis for three years if stable
   2. Annually for abdominoperineal resection
D. Clinical suspicion of recurrence [One of the following]
   1. Findings on physical examination suggestive of recurrence
   2. Anorexia
   3. Weight loss
   4. Alkaline phosphatase > 140 U/L
   5. Rising bilirubin (total bilirubin >1.9mg/dL)
   6. Abdominal or pelvic pain
   7. Abdominal or pelvic mass
   8. Hepatomegaly
   9. Ascites
   10. Bowel obstruction by KUB
   11. New onset of renal insufficiency [One of the following]
      a. BUN >20mg/dL
      b. Creatinine >1.5mg/dL
12. New onset of hydronephrosis documented on ultrasound

XXXIX. Bladder cancer [One of the following]
   A. Initial staging if muscle invasion on biopsy
   B. Following completion of treatment and bladder in place
      1. Every 3-6 months for 2 years
   C. Following completion of treatment including cystectomy
      1. Every 3-12 months for 2 years
   D. New or worsening clinical data reported [One of the following]
      1. Anorexia
      2. Weight loss
      3. Jaundice
      4. Abdominal or pelvic pain
      5. Abdominal or pelvic mass
      6. Hepatomegaly
      7. Ascites
      8. Hematuria
      9. Bowel obstruction by KUB
     10. Rectal bleeding
     11. Vaginal bleeding
     12. Hematuria
     13. New onset of renal insufficiency
        a. New onset of BUN >20mg/dL
        b. New onset of creatinine >1.5mg/dL
     14. New onset of hydronephrosis documented on ultrasound
        a. New onset of BUN >20mg/dL
        b. New onset of creatinine >1.5mg/dL

XL. New bone lesion suspicious for a metastatic lesion with no known cancer [Both]
   A. X-ray demonstrating a bone lesion suspicious for a metastatic lesion
   B. 40 years of age or older

XLI. Endometrial cancer [One of the following]
   A. Incomplete surgical staging
   B. Follow up as clinically indicated

XLII. Uterine leiomyosarcoma [One of the following]
   A. Known or suspected extrauterine disease
   B. Follow up as clinically indicated

XLIII. Malignant mesothelioma
   A. Initial staging

XLIV. Evaluation of elevated liver function tests and non diagnostic ultrasound
   A. Laboratory findings [One of the following]
1. Direct bilirubin > .2
2. Total bilirubin >1.9
3. Alkaline phosphatase > 147 IU/L
4. Gamma GT or GGT >51 IU/L
5. AST >40 IU/L
6. ALT > 56 IU/L

XLV. **Non-small cell lung cancer**\(^{38}\) [One of the following]
   A. Initial staging may be approved along with PET/CT for initial staging
   B. Rising CEA (non smoker >2.5; smoker >5.0)
   C. Rising liver function tests [one of the following]
      1. Bilirubin >1.9 mg/dL
      2. Alkaline phosphatase > 140 IU/L
   D. New or worsening signs or symptoms or clinical data [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Bowel obstruction by KUB
      8. Hematuria
      9. New onset of hydronephrosis documented on ultrasound
   E. Surveillance with no clinical or radiographic evidence of disease [One of the following]
      1. Every 6-12 months for 2 years
      2. Annually after 2 years

XLVI. **Small-cell lung cancer**\(^{39}\) [One of the following]
   A. Initial staging may be approved along with PET/CT for initial staging
   B. Rising CEA (non smoker >2.5; smoker >5.0)
   C. Rising liver function tests
   D. Surveillance with no clinical or radiographic evidence of disease [One of the following]
      1. Every 3-4 months for 2 years
      2. Every 6 months for years 3-5
      3. Annually after 5 years
   E. Change on recent chest x-ray
   F. New or worsening signs or symptoms or clinical data [One of the following]
      1. Anorexia
      2. Weight loss
      3. Abdominal or pelvic pain
      4. Abdominal or pelvic mass
      5. Hepatomegaly
      6. Ascites
      7. Bowel obstruction by KUB
      8. Hematuria
      9. New onset of hydronephrosis documented on ultrasound
XLVII. Poorly differentiated or high grade or anaplastic small cell carcinoma other than lung

[One of the following]

A. Initial staging
B. Follow up after treatment to establish a new baseline
C. Surveillance following treatment of resectable disease [One of the following]
   1. Every 3 months for a year
   2. Every 6 months after 1 year
D. Surveillance following treatment of unresectable or metastatic disease
   1. Every 3 months
E. New or worsening clinical data reported [One of the following]
   1. Anorexia
   2. Weight loss
   3. Abdominal or pelvic pain
   4. Abdominal or pelvic mass
   5. Hepatomegaly
   6. Ascites
   7. Bowel obstruction by KUB
   8. Rectal bleeding
   9. Vaginal bleeding
   10. Hematuria
   11. New onset of hydronephrosis documented on ultrasound
   12. Lab values elevated/increasing [One of the following]
      a. Rising liver function tests
      b. Rising bilirubin (Total bilirubin >1.9mg/dL)
      c. BUN >20mg/dL
      d. Creatinine >1.5mg/dL

References:

19. Hogendoorn PCW, on behalf of the ESMO/EUROBONET working group, Bone sarcomas: ESMO Clinical Practice Guidelines for the diagnosis, treatment and follow up. [http://annonc.oxfordjournals.org/content/21/suppl_5/v204.full.pdf+html](http://annonc.oxfordjournals.org/content/21/suppl_5/v204.full.pdf+html); Accessed August 27, 2011.
26. 2006 Update of ASCO recommendations for the use of tumor markers in gastrointestinal cancer. [http://jop.ascopubs.org/content/2/6/314.full.pdf+html](http://jop.ascopubs.org/content/2/6/314.full.pdf+html); Accessed August 28, 2011.


I. Renovascular hypertension, suspected renal artery stenosis\textsuperscript{1-6} [One of the following]
   A. Severe hypertension (>110 diastolic) with [One of the following]
      1. Progressive renal insufficiency
      2. Refractoriness to aggressive medical therapy
   B. Malignant or accelerated hypertension
   C. Acute worsening of previously stable hypertension
   D. Significant hypertension (>100 diastolic) in adult <35 years old
   E. New onset significant hypertension (>110 diastolic) after age 50
   F. Hypertension in a patient with:
      1. Diffuse atherosclerosis or
      2. Incidentally detected asymmetry of kidney size
   G. Hypertension with an acute elevation in plasma creatinine concentration unexplained or after therapy with an ACE inhibitor
   H. Abdominal bruit
   I. Recurring acute pulmonary edema with significant hypertension
   J. Hypokalemia (<3.5 mmol/L) with normal or elevated plasma renin (>1 ng/ml/Hr) levels in the absence of diuretic therapy
   K. Children with hypertension [MRA is preferred]
   L. Hypertension and documented neurofibromatosis

II. Intestinal angina or chronic mesenteric ischemia\textsuperscript{1,2,7-13}
   A. Recurrent acute episodes of abdominal pain [All]
      1. Postprandial epigastric pain, occasionally radiates to the back
      2. Weight loss
      3. Fear of eating

III. Acute mesenteric ischemia [A and B]\textsuperscript{12,13}
   A. Acute mesenteric ischemia is being considered (life-threatening condition)
   B. Isolated right-sided colon involvement suggesting superior mesenteric artery occlusion

IV. Evaluation of renal or liver transplant donor\textsuperscript{1,14,15}

V. Aortic aneurysm or aneurysm of the pelvic arteries (including mycotic aneurysm) [One of the following]\textsuperscript{1,2,16-22}
   A. Suspected rupture of AAA [Both]
      1. New onset of mid-abdominal or back pain
      2. Clinical findings [One of the following]
         a. Palpable, pulsatile or expansile mass
         b. Abnormal x-ray or US findings suggesting aortic disease
         c. Falling blood pressure
B. Known AAA with no surgical repair [One of the following]
   1. Periodic follow-up of an asymptomatic known AAA will be according to the following schedule if there is an inadequate ultrasound and there has not been a surgical repair. [One of the following]
      a. 2.5 -2.9 cm every 5 years
      b. 3.0 -3.4 cm every 3 years
      c. 3.5-3.9 cm every 2 years
      d. 4.0-4.4 cm every year
      e. 4.5-4.9 cm every 6 months
      f. 5.0 -5.5 cm every 3-6 months
   2. New onset of pain
C. Postoperative evaluation following repair including endovascular repair (stent graft)
   1. 1 month after repair
   2. 3 months after repair
   3. 6 months after repair
   4. Annually after repair
   5. Suspicion of endoleak
D. Aneurysm of any intra-abdominal artery detected on other imaging
E. Vascular insufficiency of the bowel [1 and 2]
   1. Abdominal pain often starting as periumbilical and often out of proportion to findings on exam
   2. Other clinical findings [One of the following]
      a. Leukocytosis, WBC >11,500/cu.mm
      b. Stool positive for occult blood
      c. Nausea, vomiting or diarrhea
      d. History of abdominal angina (pain after eating for approximately 3 hours)
F. Preoperative planning for surgical or endovascular repair
G. Screening for abdominal aortic aneurysm [Ultrasound screening is the appropriate study. CTA is the preferred study and should only be used if the aorta cannot be visualized adequately on US, and this must be documented with the US report. MRA may be used to screen with documentation of an inadequate US and a reason why CTA is contraindicated.][One of the following]
   1. Pulsatile mass with nondiagnostic ultrasound
   2. History of first degree relative with an abdominal aortic aneurysm and non interpretable ultrasound
H. Male age 65-75 with a history of smoking
I. Pulsatile mass on abdominal, vaginal or rectal examination

VI. Peripheral arterial vascular disease with abnormal ankle brachial index as defined in A and one additional of the following¹,²,23-25
A. Note: For evaluation of PVD, if meets criteria for MRA abdomen, MRA lower extremity (one only) should be certified. An MRA of the pelvis or another lower extremity should NOT be certified. ABI (ankle brachial index, ankle systolic BP divided by brachial systolic BP)
   1. Rest ABI < 0.90 in symptomatic member
   2. Exercise ABI <0.90 in symptomatic member with rest ABI >0.90
3. Toe brachial index <0.90 or pulse volume recording evidence of peripheral vascular disease if the ABI >1.30

B. Abnormal pulses
C. Bruit
D. Claudication
E. Diabetic with: [One of the following]
   1. Skin changes
   2. Loss of hair
   3. Poor capillary refill
   4. Thickened nails
   5. Thin skin

F. Arteritis (Takayasu's arteritis, Giant cell arteritis) [One of the following]
   1. ESR >20mm/hr
   2. Positive ANA
   3. Positive RF or rheumatoid factor

G. Scleroderma

H. Hypercoagulable state [One of the following]
   1. Antiphospholipid antibodies
   2. Behcet's syndrome
   3. Protein C deficiency
   4. Protein S deficiency
   5. Factor V Leiden deficiency
   6. Lupus anticoagulant
   7. Hyperactive platelet syndrome
   8. MRHFR
   9. Anticardiolipin antibodies
   10. Elevated homocysteine level
   11. Anti B2 glycoprotein antibodies
   12. Elevated fibrinogen
   13. PTT abnormal
   14. Antithrombin III antibodies
   15. Oral contraceptive use
   16. Hormone replacement
   17. Sickle cell anemia

I. Buerger's disease (thromboangiitis obliterans) [Both]
   1. History of smoking
   2. Loss of pulses or decreased pulses in the lower extremity

J. Known atherosclerotic occlusive disease when catheter angiography fails to demonstrate an occult runoff vessel suitable for vascular bypass

VII. Evaluation of the hepatic arteries and veins (including portal vein) [One of the following]1,2,20,21-23

A. Evaluation of portal and hepatic veins prior to or following TIPS (transjugular intrahepatic portosystemic shunt)
B. Evaluation of portal and hepatic veins prior to or following surgical intervention for portal hypertension
C. Evaluation of hepatic vasculature prior to and following embolization procedure
D. Evaluation of hepatic vasculature prior to planned hepatectomy
E. Evaluation of liver donor
F. Suspected hepatic vein thrombosis or Budd-Chiari syndrome [One of the following]
   1. Ascites
   2. Hepatomegaly
   3. Inadequate Doppler ultrasound of hepatic veins
G. Possible portal vein thrombosis with negative or inadequate Doppler study of the portal vein
   [One of the following]
   1. Hypercoagulable state
   2. Abdominal malignancy
H. Preoperative evaluation for pancreatic cancer

VIII. Evaluation of abdominal veins other than hepatic and portal veins\textsuperscript{1,18,22}
A. Nephrotic syndrome
B. Suspicion of iliac vein thrombus
C. Suspicion of inferior vena cava thrombus
D. Renal vein thrombosis (see X)
E. Mesenteric vein thrombosis

IX. Suspected dissection of the aorta\textsuperscript{1,22,30-32}
A. Unequal blood pressure in the arms
B. Rapid onset of “ripping, tearing, searing, or sharp” severe chest or upper back or abdominal pain
C. Syncope and chest pain
D. Shortness of breath
E. CVA or stroke
F. Loss of pulses
G. Aortic insufficiency murmur
H. Marfan’s syndrome
I. Known aortic valve disease
J. Follow up of known dissection
   1. 1 month after repair
   2. 3 months after repair
   3. 6 months after repair
   4. 12 months after repair
   5. Annually after 12 months
K. New symptoms after repair [One of the following]
   1. Unequal blood pressure in the arms
   2. Rapid onset of “ripping, tearing, searing, or sharp” severe chest or upper back or abdominal pain
   3. Syncope and chest pain
   4. Shortness of breath
   5. CVA or stroke
   6. Loss of pulses
   7. Aortic insufficiency murmur
X.  **Suspected renal vein thrombosis (Ultrasound is the preferred initial imaging)**

[One of the following]
A.  Nephrotic syndrome
B.  Proteinuria – 3 grams or more in 24 hours
C.  Lupus nephritis
D.  Hypercoagulable state [One of the following]
   1.  Antiphospholipid antibodies
   2.  Behcet's syndrome
   3.  Protein C deficiency
   4.  Protein S deficiency
   5.  Factor V Leiden deficiency
   6.  Lupus anticoagulant
   7.  Hyperactive platelet syndrome
   8.  MRHFR
   9.  Anticardiolipin antibodies
   10. Elevated homocysteine level
   11. Anti B2 glycoprotein antibodies
   12. Elevated fibrinogen
   13. PTT abnormal
   14. Antithrombin III antibodies
   15. Oral contraceptive use
   16. Hormone replacement
   17. Sickle cell anemia

XI. **Vasculitis and collagen vascular disease**

A.  History of collagen vascular disease
B.  Blue toe syndrome
C.  Claudication
D.  Nonhealing vascular ulcers of the lower extremity
E.  History of suspicion of polyarteritis nodosa
F.  Known or suspected Takayasu's arteritis
References:

1. Theodoropoulou A. Chapter 43, P401. 


Additional references for Medicare

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38. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (L31355), Wisconsin Physicians Service Insurance Corporation, Nebraska, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSSelection=NCD&PolicyType=Final&s=36&CntrctrType=1%7c9&KeyWord=74185&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=74185&kq=true&bc=IAAAAAAAA&.

39. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (L31355), Wisconsin Physicians Service Insurance Corporation, Wisconsin, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSSelection=NCD&PolicyType=Final&s=57&CntrctrType=1%7c9&KeyWord=74185&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=74185&kq=true&bc=IAAAAAAAA&.

40. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (L31355), Wisconsin Physicians Service Insurance Corporation, Illinois, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSSelection=NCD&PolicyType=Final&s=19&CntrctrType=1%7c9&KeyWord=74185&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=74185&kq=true&bc=IAAAAAAAA&.

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74185 MRA of the Abdomen

Clinical criteria reviewed/revised: 6/18/12, 8/21/11, 11/07/10, 5/26/10, 12/09, 9/16/09

Medical Advisory Committee reviewed and approved: 9/19/12, 6/27/12, 9/21/11

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74185 MRA of the Abdomen without or with Gadolinium

Medicare AR, CA, CO, CT, DC, DE, FL, HI, IA, IL, IN, KS, LA, MA, MD, ME, MI, MN, MO, MS, NE, NH, NJ, NM, NV, NY, OK, PA, RI, TX, VT, WI

I. Preoperative planning of surgical or endovascular aneurysm repair

II. Renal artery evaluation
   A. Renal artery bruit
   B. Late onset hypertension
   C. Hypertension refractory to medication
   D. Elevated serum renins
   E. Increasing creatinine
   F. Abnormal renogram
   G. Small kidney on other imaging
   H. Unequal size of the kidneys on other imaging
   I. Worsening renal function

III. Preoperative evaluation for pancreatic cancer

IV. Evaluation of the portal and hepatic veins

V. Planning interventional or surgical procedure of the abdominal vessels

VI. Aortoiliac disease

VII. Aortic dissection

VIII. Planning for aneurysm repair

References:

1. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L32611), Novitas Solutions, Inc., Arkansas, accessed at [http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=3&CntctrType=1%7c9&KeyWord=74185&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=74185&kq=true&bc=IAAAAAAA&](http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=3&CntctrType=1%7c9&KeyWord=74185&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=74185&kq=true&bc=IAAAAAAA&)

2. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) of the Head and Neck, Chest, Abdomen & Pelvis, Lower Extremities (L28277), Palmetto GBA, California, accessed at [http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=6&CntctrType=1%7c9&KeyWord=74185&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=74185&kq=true&bc=IAAAAAAA&](http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=6&CntctrType=1%7c9&KeyWord=74185&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=74185&kq=true&bc=IAAAAAAA&)


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4. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L25367), National Government Services, Inc., Connecticut, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=9&CntrctrType=1%7c9&KeyWord=74185&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=74185&qk=true&bc=IAAAAAAIAAAA.

5. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L31399), Novitas Solutions, Inc., District of Columbia, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=10&CntrctrType=1%7c9&KeyWord=74185&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=74185&qk=true&bc=IAAAAAAAAAAAAA.

6. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L31399), Novitas Solutions, Inc., Delaware, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=11&CntrctrType=1%7c9&KeyWord=74185&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=74185&qk=true&bc=IAAAAAAIAAAA.

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11. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (L31355), Wisconsin Physicians Service Insurance Corporation, Indiana, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=20&CntrctrType=1%7c9&KeyWord=74185&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=74185&qk=true&bc=IAAAAAAIAAAA.

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74185 MRA Abdomen: MEDICARE AR, CA, CO, CT, DC, DE, FL, HI, IA, IL, IN, KS, LA, MA, MD, ME, MI, MN, MO, MS, NE, NH, NJ, NM, NV, NY, OK, PA, RI, TX, VT, WI

Critical criteria reviewed/revised: 8/1/12
Medical Advisory Committee reviewed and approved: 9/19/12
I. Evaluation of patients who have had an incomplete fiber optic colonoscopy or if an optical colonoscopy is contraindicated [One of the following]1-5
   A. Failed colonoscopy [One of the following]
      1. If the virtual colonoscopy is to be performed immediately following the failed colonoscopy, then a copy of the colonoscopy note must be provided
      2. If the virtual colonoscopy is to be performed at another time, a copy of the failed colonoscopy report must be provided
   B. Fiber optic colonoscopy contraindicated [One of the following]
      1. Recent myocardial infarction
      2. Bleeding disorder
      3. Contraindication to sedation

Virtual colonoscopy is considered to be experimental or investigational for the evaluation of inflammatory bowel disease and may not be certified for this indication

References:

1. Veerappan GR, Cash BD. Should Computed Tomographic Colonography Replace Optical Colonoscopy Screening For Colorectal Cancer? Pol Arch Med Wewn 209 Apr; 119 (4):236-41 Review Article Gastroenterology Service Walter Reed Army Medical Center, Washington, DC, USA.
74261 Virtual Colonoscopy Diagnostic without Contrast
74262 Virtual Colonoscopy Diagnostic with Contrast

Medicare AR, CA, CO, FL, HI, IA, IL, IN, KS, KY, LA, MA, ME, MI, MS, MN, MO, NC, NE, NH, NM, NV, NY, OH, OK, RI, SC, TX VA, VT, WI, WV

I. Evaluation of patients who have had an incomplete fiberoptic colonoscopy despite adequate preparation this episode or past episode

A. Failed colonoscopy [One of the following]
   1. Obstructing lesion
   2. Suspected obstructing neoplasm
   3. Abnormal anatomy
      a. Scarring with obstruction from
         i. Prior surgery
         ii. Radiation
         iii. Diverticulosis
         iv. Spasm
         v. Tortuous colon
         vi. Diverticulitis
      4. Extrinsic compression of the colon which does not allow passage of the colonoscope

B. Fiberoptic colonoscopy contraindicated
   1. Recent myocardial infarction
   2. Frail individual
   3. Bleeding disorder or uncorrectable coagulopathy
   4. Contraindication to sedation
   5. Long term anticoagulation which cannot be stopped
   6. Contraindication to anesthesia severe COPD or prior adverse reaction to anesthesia

C. Evaluation of submucosal abnormality detected on colonoscopy or other imaging

D. Prior colonoscopy with a complication such as perforation

E. Preoperative cancer staging and determination of colonic wall invasion
References:

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10. Local Coverage Determination (LCD) for Virtual Colonoscopy (CT Colonography) (L17259) NHIC Corp., Massachusetts, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NC%7cPolicyType=Final&s=24&CntntType=1%7cKey&Word=74261&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=74261&kq=true&bc=IAAAAAAAAAAA.

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74261, 74262 Virtual Colonoscopy: Medicare AR, CA, CO, FL, HI, IA, IL, IN, KS, KY, LA, MA, ME, MI, MN, MO, MS, NC, NE, NH, NM, NV, NY OH, OK, RI, SC, TX, VA, VT, WI, WV

Clinical Criteria Review/Revised: 09/06/12
Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
I. **Asymptomatic individual 50 years of age or older**¹, ²
   A. Not more frequently than every 5 years [One of the following]
      1. Initial examination
      2. Prior colonoscopy or virtual colonoscopy was normal or documented polyp(s) less than 6mm in size

II. **Surveillance [One of the following]**², ³
   A. Individual with polyp(s) 6mm or larger in size who refuse optical colonoscopy
   B. Individual with polyp(s) 6mm or larger in whom colonoscopy is contraindicated
      1. Bleeding disorder
      2. Severe lung disease
      3. Intolerance or allergy to sedation
      4. Anticoagulation therapy that cannot be stopped
      5. Recent myocardial infarction

For failed optical colonoscopy please see diagnostic virtual colonoscopy 74261 and 74262.

**Contraindications**
- Crohn’s disease
- Diverticulitis

References:

Virtual Colonoscopy (Screening)

Medicare

CT Colonoscopy is not a covered benefit.

However, in the case of an incomplete optical colonoscopy or comorbidities that contraindicate the use of optical colonoscopy, a diagnostic CT colonoscopy may be covered.

References:

I. **Known coronary artery disease (75559 and 75563) [One of the following]**
   A. Assessment of myocardial viability prior to coronary revascularization
      1. Documentation of regional left ventricular dysfunction and a nuclear stress test showing a fixed defect in the same region as the demonstrated left ventricular dysfunction and in the same region under consideration for a revascularization procedure
   B. Recent myocardial infarction
      1. Documentation of a myocardial infarction within the last four weeks AND
      2. Documentation of a heart catheterization since the myocardial infarction showing no obstructive stenosis
   C. Assessment of a recent cardiac catheterization or coronary CT angiogram
      1. Either of these studies revealed any stenosis of unclear clinical significance and that further imaging may alter management.

II. **Suspected coronary disease (75559 and 75563)**
    A. Evaluation of chest pain or shortness of breath
       1. A recent cardiac catheterization was performed and one or more coronary arteries were not identified.
       2. No imaging stress test, cardiac catheterization or coronary CT angiogram has been performed.
          a. Intermediate risk on the pretest probability assessment AND
          b. Unable to exercise or the electrocardiogram shows Wolff-Parkinson-White syndrome, complete left bundle branch block, ventricular paced rhythm, or 1 mm or more ST-J depression with horizontal or downsloping ST segments 80 msec after the J point

III. **Ventricular structure and function**
    A. Assessment of congenital heart disease
       1. No cardiac magnetic resonance imaging study has been performed for this indication within the last year
    B. Assessment of acute myocardial infarction
       1. An echocardiogram was performed after the myocardial infarction and was uninterpretable.
    C. Assessment of congestive heart failure
       1. An echocardiogram was performed for this indication and was uninterpretable.
D. Assessment of left ventricular ejection fraction
   1. An unexplained change in ejection fraction on recent cardiac imaging by another modality

E. Cardiomyopathy
   1. Any of the following confirmed diagnoses are present:
      a. Cardiac sarcoi (known or suspected)
      b. Cardiac amyloid
      c. Hypertrophic cardiomyopathy
   2. Cardiotoxic chemotherapy administration
      a. An echocardiogram or MUGA scan was performed and was uninterpretable.

F. Arrhythmogenic right ventricular dysplasia
   1. Any of the following documented findings leads to clinical suspicion of this diagnosis:
      a. Greater than 1000 ventricular premature contractions per day
      b. Ventricular tachycardia
      c. Family history of this disorder
      d. Epsilon waves on the electrocardiogram

G. Assessment of elevated troponin
   1. Cardiac catheterization was performed and no obstructive coronary artery disease was identified.

IV. Valvular function
   A. An echocardiogram was performed for this indication and was uninterpretable.

V. Intra-cardiac structures [One of the following]
   A. Radiofrequency ablation planning [One of the following]
      1. No cardiac CT has been performed for this indication.
      2. Cardiac CT was performed but was uninterpretable.
   B. Assessment of a cardiac mass
      1. Mass has been documented by echocardiography, cardiac catheterization or cardiac CT.

VI. Extra-cardiac structures [One of the following]
   A. Assessment of aortic dissection [One of the following]
      1. No cardiac CT has been performed for this indication.
      2. A cardiac CT was performed, but was uninterpretable.
   B. Assessment of pericardial disease
      1. An echocardiogram has been performed for this indication AND
      2. A cardiac CT was not performed or was performed and was uninterpretable.
References:


Medicare LCD References:


5. Local Coverage Determination (LCD) for Magnetic Resonance Angiography (MRA) (L28723). Wisconsin Physician Service Insurance Corporation. Indiana. Accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&ArticleType=Ed%7cKey%7cSAD%7cFAQ&PCTHeaderType=Final&Ps=20&CntrCrtType=1%7c9&KeyWord=75557&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=75557&kq=true&bc=IAAAAAAAA&


Clinical Criteria Reviewed/Revised: 8/12/12, 9/2/11
Medical Advisory Committee Reviewed and Approved: 9/19/12, 9/21/11

75557, 75559, 75561, 75563 Cardiac MRI
The uses for cardiac CT/coronary CT angiography (CCTA) include assessment for coronary artery disease, congenital heart disease, cardiac structure and morphology, and quantitative coronary calcium scoring.

The following is a list of exclusion criteria for CCTA:

- Atrial fibrillation
- Multifocal atrial tachycardia (MAT)
- Frequent atrial premature contractions
- More than 50 premature ventricular contractions per hour
- Inability to lie flat
- Body mass index of 40 or more
- Inability to obtain a heart rate less than 65 beats per minute after beta-blockers
- Calcium (Agatston) score of 1000 or more
- Inability to hold breath for at least 8 seconds
- Renal insufficiency

I. Coronary artery calcium scoring (75571)
   A. No prior abnormal imaging stress test, coronary revascularization or prior catheterization or cardiac CT angiogram documenting coronary artery disease AND
      1. ATP* risk <10% and
         a. Father or brother with coronary heart disease diagnosed at age 55 or less
         b. Mother or sister with coronary heart disease diagnosed at age 65 or less
      2. ATP* risk 10-19% AND
         a. No symptoms of chest pain or shortness of breath

II. Cardiac CT for structure and morphology (75572)
   A. Evaluation of native or prosthetic valve, cardiac mass, or pericardial mass
      1. A prior cardiac CT angiogram, cardiac MRI or echocardiogram was performed for this indication and was uninterpretable
   B. Coronary vein mapping
      1. Biventricular pacemaker placement is planned
   C. Coronary artery bypass graft localization
      1. Thoracic or cardiac surgery is planned
   D. Pulmonary vein evaluation
      1. Radiofrequency ablation for atrial fibrillation is planned
E. Left ventricular function evaluation
   1. Congestive heart failure or a myocardial infarction within the last four weeks AND
      a. An echocardiogram, cardiac MRI, or MUGA was performed but was uninterpretable
F. Quantitative right ventricular function evaluation
   1. An echocardiogram, cardiac MRI, or MUGA was performed but was uninterpretable
G. Suspected arrhythmogenic right ventricular dysplasia (ARVD)
   1. AVRD is suspected because of documentation of greater than 1000 ventricular premature
      contractions/day, ventricular tachycardia, family history of ARVD, or Epsilon waves on the
      electrocardiogram AND either
      a. No cardiac MRI has been performed and there is a contraindication to MRI
      b. A cardiac MRI was performed and was uninterpretable

III. Cardiac CT for congenital heart disease (75573)
A. Coronary artery anomaly evaluation
   1. A cardiac catheterization was performed and not all coronary arteries were identified
B. Thoracic arteriovenous anomaly evaluation
   1. A cardiac MRI or chest CT angiogram was performed and suggested congenital heart
      disease
C. Complex congenital heart disease evaluation
   1. No cardiac CT or cardiac MRI has been performed and there is a contraindication to
      cardiac MRI
   2. A cardiac CT or cardiac MRI was performed one year ago or more

IV. Cardiac CT angiography (75574)
A. Evaluation of known coronary artery disease (CAD)
   1. CAD documented by prior imaging stress test, cardiac catheterization, cardiac CT
      angiogram, coronary revascularization, carotid stenosis or stroke, peripheral artery
      disease, or aortic aneurysm
      a. New chest pain or shortness of breath
         i. Prior coronary artery bypass grafting and there are no exclusions to cardiac CT
            angiography
         ii. Medicare only – an imaging stress test or catheterization has not been performed
            nor is planned to evaluate symptoms and there are there are no exclusions to
            cardiac CT angiography
      b. No new chest pain or shortness of breath
         i. A left main stent of three mm or more is present and there are no exclusions to
            cardiac CT angiography
   2. CAD documented by a prior calcium score less than 400
      a. Evaluation of new chest pain or dyspnea, no imaging stress test is planned, and there
         are no exclusions to cardiac CT angiography
B. Evaluation of newly diagnosed congestive heart failure or cardiomyopathy
   1. No prior history of coronary artery disease, the ejection fraction is less than 50 percent,
      and low or intermediate risk on the pre-test probability assessment AND
   2. No exclusions to cardiac CT angiography
C. Evaluation of suspected coronary artery disease
   1. New or changed chest pain or shortness of breath
a. Contraindication to a routine exercise stress test (inability to exercise, diabetes, digoxin use, poor heart rate response, Wolff-Parkinson-White syndrome, complete left bundle branch block, one mm or more ST-J depression with horizontal or downsloping ST segments 80 msec after the J point, or ventricular paced rhythm)
   i. Low or intermediate risk on the pre-test probability assessment AND
   ii. No exclusions to cardiac CT angiography
b. No contraindications to a routine exercise stress test
   i. Normal routine exercise stress
      01. New or worsening chest pain or shortness of breath, cardiac catheterization is not planned and there are no exclusions to cardiac CT angiography
   ii. Routine exercise stress test abnormal or not performed
      01. Intermediate risk on the pre-test probability assessment and no exclusions to cardiac CT angiography

2. Prior imaging stress test
   a. Normal imaging stress test
      i. New or worsening chest pain or shortness of breath AND
      ii. Cardiac catheterization is not planned AND
      iii. No exclusions to cardiac CT angiography
   b. Abnormal imaging stress test documenting ANY of the following if no exclusions to cardiac CT angiography are present
      i. Normal treadmill with reversible perfusion abnormality
      ii. Equivocal
      iii. Abnormal treadmill with normal imaging

3. Evaluation for non-coronary cardiac surgery
   a. Intermediate risk on the pre-test probability assessment and no exclusions to cardiac CT angiography

4. Suspected anomalous coronary artery
   a. Cardiac catheterization was performed, all coronary arteries were not identified, and no exclusions to cardiac CT angiography

*Control/Click here for an online ATP risk calculator

Rule 1: Determination of pretest probability for coronary disease based on chest pain

<table>
<thead>
<tr>
<th>Pre-Test Probability of CAD by Age, Gender, and Symptoms</th>
<th>Age- Years</th>
<th>Gender</th>
<th>Typical/Definite Angina Pectoris</th>
<th>Atypical/Probable Angina Pectoris</th>
<th>Non-anginal Chest Pain</th>
<th>Asymptomatic</th>
</tr>
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<tbody>
<tr>
<td>30-39 Men</td>
<td>Intermediate</td>
<td>Intermediate</td>
<td>Low</td>
<td>Very low</td>
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<tr>
<td>30-39 Women</td>
<td>Intermediate</td>
<td>Very low</td>
<td>Very low</td>
<td>Very low</td>
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<tr>
<td>40-49 Men</td>
<td>High</td>
<td>Intermediate</td>
<td>Intermediate</td>
<td>Low</td>
<td></td>
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<tr>
<td>40-49 Women</td>
<td>Intermediate</td>
<td>Low</td>
<td>Very low</td>
<td>Very low</td>
<td></td>
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<tr>
<td>50-59 Men</td>
<td>High</td>
<td>Intermediate</td>
<td>Intermediate</td>
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<tr>
<td>50-59 Women</td>
<td>Intermediate</td>
<td>Intermediate</td>
<td>Low</td>
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<tr>
<td>≥60</td>
<td>Men</td>
<td>High</td>
<td>Intermediate</td>
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<td></td>
<td>Women</td>
<td>High</td>
<td>Intermediate</td>
<td>Intermediate</td>
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</table>

- **High:** Greater than 90% pre-test probability
- **Intermediate:** Between 10% and 90% pre-test probability
- **Low:** Between 5% and 10% pre-test probability
- **Very Low:** Less than 5% pre-test probability

**Typical angina** (definite): 1) Substernal chest pain or discomfort that is 2) provoked by exertion or emotional stress and 3) relieved by rest and/or nitroglycerin.

**Atypical angina** (probable): Chest pain or discomfort that lacks one of the characteristics of definite or typical angina.

**Non-anginal chest pain:** Chest pain or discomfort that meets one or none of the typical angina characteristics.

**References:**


**Medicare LCD References:**


4. Local Coverage Determination (LCD) for Computed Cardiac Tomography (CCT) and Computed Tomography Coronary Angiography (CTCA) (L32750), Novitas Solutions, Inc., Arkansas, accessed at [http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&PolicyType=Final&s=3&CntrrrType=17c3&CptHcpcsCode=75571&kq=true&bc=IAAAAAAAA&A].

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### 75571, 75572, 75573, 75574 Coronary Artery Calcium Scoring, Heart Structure and Morphology

<table>
<thead>
<tr>
<th>Clinical criteria reviewed/revised:</th>
<th>9/2/11, 4/11/11</th>
</tr>
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<tr>
<td>Medical Advisory Committee reviewed and approved:</td>
<td>9/19/12, 9/21/11</td>
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</table>
The uses for Cardiac CT/Coronary CT angiography (CCTA) include assessment for coronary artery disease, congenital heart disease, cardiac structure and morphology, and quantitative coronary calcium scoring.

The following is a list of exclusion criteria for CCTA:

- Atrial fibrillation
- Multifocal atrial tachycardia (MAT)
- Frequent atrial premature contractions
- More than 50 premature ventricular contractions per hour
- Inability to lie flat
- Body mass index of 40 or more
- Inability to obtain a heart rate less than 65 beats per minute after beta-blockers
- Calcium (Agatston) score of 1000 or more
- Inability to hold breath for at least 8 seconds
- Renal Insufficiency

I. Coronary artery calcium scoring (75571)
   A. No prior abnormal imaging stress test, coronary revascularization or prior catheterization or cardiac CT angiogram documenting coronary artery disease AND
   1. ATP* risk <10% and
      a. Father or brother with coronary heart disease diagnosed at age 55 or less
      b. Mother or sister with coronary heart disease diagnosed at age 65 or less
   2. ATP* risk 10-19% AND
      a. No symptoms of chest pain or shortness of breath

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This test is considered to be non-covered for Medicare beneficiaries in these states.

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75571 Coronary Artery Calcium Scoring:

Medicare AL, AR, CO, CT, DC, DE, FL, GA, IA, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, NC, NE, NH, NJ, NM, NY, OH, OK, PA, RI, SC, TN, VA, VT, WI, WV

Clinical criteria reviewed/revised: 9/6/12
Medical Advisory Committee reviewed and approved: 9/19/12
The uses for cardiac CT/coronary CT angiography (CCTA) include assessment for coronary artery disease, congenital heart disease, cardiac structure and morphology, and quantitative coronary calcium scoring.

The following is a list of exclusion criteria for CCTA:

- Atrial fibrillation
- Multifocal atrial tachycardia (MAT)
- Inability to lie flat
- Body mass index of 40 or more
- Inability to obtain a heart rate less than 65 beats per minute after beta-blockers
- Calcium (Agatston) score of 1000 or more
- Inability to hold breath for at least 8 seconds
- Renal insufficiency

I. **Cardiac CT for structure and morphology (75572)** [One of the following]
   A. Evaluation of native or prosthetic valve, cardiac mass, or pericardial mass
      1. A prior cardiac CT angiogram, cardiac MRI or echocardiogram was performed for this indication and was uninterpretable
   B. Coronary vein mapping
      1. Biventricular pacemaker placement is planned
   C. Coronary artery bypass graft localization
      1. Thoracic or cardiac surgery is planned
   D. Pulmonary vein evaluation
      1. Radiofrequency ablation for atrial fibrillation is planned
   E. Left ventricular function evaluation
      1. Congestive heart failure or a myocardial infarction within the last four weeks AND
         a. An echocardiogram, cardiac MRI, or MUGA was performed but was uninterpretable
   F. Quantitative right ventricular function evaluation
      1. An echocardiogram, cardiac MRI, or MUGA was performed but was uninterpretable
   G. Suspected arrhythmogenic right ventricular dysplasia (ARVD)
1. AVRD is suspected because of documentation of greater than 1000 ventricular premature contractions/day, ventricular tachycardia, family history of ARVD, or Epsilon waves on the electrocardiogram AND either
   a. No cardiac MRI has been performed and there is a contraindication to MRI
   b. A cardiac MRI was performed and was uninterpretable

II. Cardiac CT for congenital heart disease (75573) [One of the following]
   A. Coronary artery anomaly evaluation
      1. A cardiac catheterization was performed and not all coronary arteries were identified
   B. Thoracic arteriovenous anomaly evaluation
      1. A cardiac MRI or chest CT angiogram was performed and suggested congenital heart disease
   C. Complex congenital heart disease evaluation

III. Cardiac CT angiography (75574) [One of the following]
   A. Evaluation of known coronary artery disease (CAD) [One of the following]
      1. CAD documented by prior imaging stress test, cardiac catheterization, cardiac CT angiogram, coronary revascularization, diabetes, carotid stenosis or stroke, peripheral artery disease, or aortic aneurysm [One of the following]
         a. New chest pain or shortness of breath
            i. Prior coronary artery bypass grafting or coronary artery stent and there are no exclusions to cardiac CT angiography
            ii. *Medicare only* – an imaging stress test or catheterization has not been performed nor is planned to evaluate symptoms and there are no exclusions to cardiac CT angiography
         b. No new chest pain or shortness of breath
            i. A left main stent of three mm or more is present and there are no exclusions to cardiac CT angiography
      2. CAD documented by a prior calcium score less than 400
         a. Evaluation of new chest pain or dyspnea, no imaging stress test is planned, and there are no exclusions to cardiac CT angiography
   B. Evaluation of newly diagnosed congestive heart failure or cardiomyopathy
      1. No prior history of coronary artery disease, the ejection fraction is less than 50 percent, and low or intermediate risk on the pre-test probability assessment AND
      2. No exclusions to cardiac CT angiography
   C. Evaluation of suspected coronary artery disease [One of the following]
      1. New or changed chest pain or shortness of breath
         a. Contraindication to a routine exercise stress test (inability to exercise, diabetes, digoxin use, poor heart rate response, Wolff-Parkinson-White syndrome, complete left bundle branch block, right bundle branch block, intraventricular conduction delay, left ventricular hypertrophy, atrial fibrillation marked resting ST segment changes one mm or more ST-J depression with horizontal or downsloping ST segments 80 msec after the J point, or ventricular paced rhythm)
            i. Low or intermediate risk on the pre-test probability assessment AND
            ii. No exclusions to cardiac CT angiography
         b. No contraindications to a routine exercise stress test
i. Normal routine exercise stress
   01. New or worsening chest pain or shortness of breath, cardiac catheterization is not planned and there are no exclusions to cardiac CT angiography

ii. Routine exercise stress test abnormal or not performed
   01. Intermediate risk on the pre-test probability assessment and no exclusions to cardiac CT angiography

2. Prior imaging stress test [One of the following]
   a. Normal imaging stress test
      i. New or worsening chest pain or shortness of breath AND
      ii. Cardiac catheterization is not planned AND
      iii. No exclusions to cardiac CT angiography
   b. Abnormal imaging stress test documenting ANY of the following if no exclusions to cardiac CT angiography are present
      i. Normal treadmill with reversible perfusion abnormality
      ii. Equivocal
      iii. Abnormal treadmill with normal imaging

3. Evaluation for non-coronary cardiac surgery
   a. Intermediate risk on the pre-test probability assessment and no exclusions to cardiac CT angiography

4. Suspected anomalous coronary artery
   a. Cardiac catheterization was performed, all coronary arteries were not identified, and no exclusions to cardiac CT angiography

**IV. Evaluation prior to non-coronary cardiac surgery [One of the following]**
   A. Valve repair
   B. Valve replacement
   C. Aneurysm of the ascending aorta
   D. Dissection repair

*Control/Click here for an online ATP risk calculator.*

**Rule 1: Determination of pretest probability for coronary disease based on chest pain**

<p>| Pre-Test Probability of CAD by Age, Gender, and Symptoms |
|---|---|---|---|---|---|
| Age- Years | Gender | Typical/Definite Angina Pectoris | Atypical/Probable Angina Pectoris | Non-anginal Chest Pain | Asymptomatic |
| 30-39 | Men | Intermediate | Intermediate | Low | Very low |
|  | Women | Intermediate | Very low | Very low | Very low |
| 40-49 | Men | High | Intermediate | Intermediate | Low |
|  | Women | Intermediate | Low | Very low | Very low |
| 50-59 | Men | High | Intermediate | Intermediate | Low |
|  | Women | Intermediate | Intermediate | Low | Very low |
| ≥60 | Men | High | Intermediate | Intermediate | Low |</p>
<table>
<thead>
<tr>
<th>Women</th>
<th>High</th>
<th>Intermediate</th>
<th>Intermediate</th>
<th>Low</th>
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<tbody>
<tr>
<td></td>
<td>High: Greater than 90% pre-test probability</td>
<td>Intermediate: Between 10% and 90% pre-test probability</td>
<td>Low: Between 5% and 10% pre-test probability</td>
<td>Very Low: Less than 5% pre-test probability</td>
</tr>
</tbody>
</table>

**Typical angina (definite):** 1) Substernal chest pain or discomfort that is 2) provoked by exertion or emotional stress and 3) relieved by rest and/or nitroglycerin.

**Atypical angina (probable):** Chest pain or discomfort that lacks one of the characteristics of definite or typical angina.

**Non-anginal chest pain:** Chest pain or discomfort that meets one or none of the typical angina characteristics.
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75572, 75573, 75574 CT/CTA Heart and Coronary Arteries Structure and Morphology: Medicare AL, AR, CO, CT, DC, DE, FL, GA, IA, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, NC, NE, NH, NJ, NM, NY, OH, OK, PA, RI, SC, TN, TX, VA, VT, WI, WV

Clinical criteria reviewed/revised: 8/2/12, 9/2/11, 4/11/11
Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
Peripheral arterial vascular disease with abnormal ankle brachial index as defined in A and one additional of the following\textsuperscript{1,2}

A. Note: For evaluation of PVD, if meets criteria for MRA abdomen, MRA lower extremity (one only) should be certified. An MRA of the pelvis or another lower extremity should NOT be certified. ABI (ankle brachial index, ankle systolic BP divided by brachial systolic BP)
   1. Rest ABI < 0.90 in symptomatic member
   2. Exercise ABI < 0.90 in symptomatic member with rest ABI > 0.90
   3. Toe brachial index < 0.90 or pulse volume recording evidence of peripheral vascular disease if the ABI > 1.30

B. Abnormal pulses
C. Bruit
D. Claudication
E. Diabetic with [One of the following]
   1. Skin changes
   2. Loss of hair
   3. Poor capillary refill
   4. Thickened nails
   5. Thin skin

F. Arteritis (Takayasu's arteritis, Giant cell arteritis) [One of the following]
   1. ESR > 20 mm/hr
   2. Positive ANA
   3. Positive RF or rheumatoid factor

G. Scleroderma

H. Hypercoagulable state [One of the following]
   1. Antiphospholipid antibodies
   2. Behcet's syndrome
   3. Protein C deficiency
   4. Protein S deficiency
   5. Factor V Leiden deficiency
   6. Lupus anticoagulant
   7. Hyperactive platelet syndrome
   8. MRHFR
   9. Anti-cardiolipin antibodies
   10. Elevated homocysteine level
   11. Anti B2 glycoprotein antibodies
   12. Elevated fibrinogen
   13. PTT abnormal
   14. Antithrombin III antibodies
   15. Oral contraceptive use
   16. Hormone replacement
17. Sickle cell anemia

I. Buerger's disease (thromboangiitis obliterans) [Both]
   1. History of smoking
   2. Loss of pulses or decreased pulses in the lower extremity

J. Known atherosclerotic occlusive disease when catheter angiography fails to demonstrate an occult runoff vessel suitable for vascular bypass

II. Aneurysm of the aorta, or iliac or femoral or popliteal arteries\(^2,3\) [One of the following]

A. Suspected rupture of AAA [Both]
   1. New onset of mid-abdominal or back pain
   2. Clinical findings [One of the following]
      a. Pulsatile or expansile mass
      b. Abnormal x-ray suggesting aortic aneurysm
      c. Falling blood pressure

B. Known AAA [One of the following]
   1. Periodic follow-up of an asymptomatic known AAA will be according to the following schedule if there is an inadequate ultrasound and there has not been a surgical repair
      a. 2.5-2.9 cm every 5 years
      b. 3.0-3.4 cm every 3 years
      c. 3.5-3.9 cm every 2 years
      d. 4.0-4.4 cm every year
      e. 4.5-4.9 cm every 6 months
      f. 5.0-5.5 cm every 3-6 months
   2. New onset of pain

C. Postoperative evaluation following repair including endovascular repair (stent graft) [One of the following]
   1. 1 month after repair
   2. 3 months after repair
   3. 6 months after repair
   4. Annually after repair
   5. Suspicion of endoleak

D. Aneurysm of any intraabdominal or peripheral artery detected on other imaging

E. Vascular insufficiency of the bowel [both]
   1. Abdominal pain often starting as periumbilical and often out of proportion to findings on exam
   2. Other clinical findings [One of the following]
      a. WBC >11,500/cu.mm
      b. Stool positive for occult blood
      c. Nausea, vomiting or diarrhea
      d. History of abdominal angina (pain after eating for approximately 3 hours)

F. Planning for endovascular or surgical repair

G. Screening for abdominal aortic aneurysm [ultrasound screening is the appropriate study. CTA should only be used if the aorta cannot be visualized adequately on US and this must be documented with the US report] [One of the following]
   1. Pulsatile mass with non diagnostic ultrasound
2. History of first degree relative with an abdominal aortic aneurysm and non- interpretable ultrasound
3. Male age 65-75 with a smoking history one time in a lifetime
H. Pulsatile mass on abdominal, vaginal or rectal examination

References:

The rapid evolution of CT, MRI and ultrasound technology in the last decade permits the acquisition of data sets that can be manipulated by computer software into multiplanar images without exposing patients to additional radiation (CT), or time (MRI). Multiplanar 2D images can be created from a multidetector CT data set almost instantly. These codes are not to be used for 2D multiplanar images created from the original data set for CT, MRI or ultrasound.

These codes refer to 3D images only. In some cases (CTA and MRA and breast MRI) the 3D images are considered to be included in the primary imaging code since these studies should not be interpreted without them. In other circumstances, the 3D images bring additional value to a study and may significantly impact on image interpretation and clinical management.

The common indications are:

I. **Bone tumor – CT**

II. **Complex facial trauma – CT**

III. **Complex fracture – CT**
   A. Comminuted fractures of the humerus
   B. Comminuted fractures of the femur
   C. Comminuted fractures of the fibula
   D. Comminuted fractures of the tibia
   E. Fractures of the pelvis
   F. Comminuted fractures of the face and/or orbit

IV. **Congenital anomalies of the ear – CT**

V. **Craniosynostosis – CT**
VI. Developmental dysplasia of the hip – CT
VII. Dislocation of sternoclavicular joint – CT
VIII. Eagle’s syndrome – CT
IX. Evaluation of the ossicles of the ear – CT
X. Fracture of the acetabulum – CT
XI. Pectus deformity – CT
XII. Pre-operative planning for congenital anomaly repair
XIII. Pre-operative planning of disc surgery
XIV. Pre-operative planning of joint prosthesis – CT
XV. Pre-operative planning of scoliosis surgery – CT
XVI. Suspicion of fracture with negative x-ray – CT
    A. Pelvis
    B. Scapula
XVII. Femoroacetabular impingement syndrome – CT
XVIII. MRCP – MRI
XIX. Gynecologic indications (3D should not be routine with all pelvic sonograms.)
    A. Planned myomectomy-mapping of uterine fibroids
    B. Congenital anomalies of the uterus
        1. Recurrent pregnancy loss (2 or more)
        2. Clarification of findings on prior ultrasound including saline infusion hysterosonography (SIS), MRI, hysterosalpingogram or CT
    C. Abnormal uterine bleeding
XX. Echocardiography – echocardiogram
    A. Assessment of left ventricular function
        1. Planned placement of implantable cardioverter-defibrillator
        2. Planned use of cardiotoxic chemotherapy
    B. Congenital heart disease
    C. Valvular stenosis or regurgitation (insufficiency) [Both]
        1. Surgery is planned
        2. Transesophageal echocardiogram not performed
XXI. Spinal fracture – CT

XXII. Planning for endovascular repair of an aortic aneurysm or thoracoabdominal aneurysm – CT

XXIII. Preoperative planning for kidney or renal surgery – CT

XXIV. Preoperative planning for intervention in the liver for primary or metastatic disease – CT

XXV. Preoperative planning for brain tumor resection – MRI

XXVI. Preoperative planning for brain aneurysm repair – MRI

XXVII. Planning for radiation therapy of known primary brain tumor – MRI

XXVIII. Planning for pectus excavatum or carinatum repair – CT

References:

1. Benacerraf BR, Shipp TD, Bromley B. Which patients benefit from a 3D reconstructed coronal view of the uterus added to standard Routine 2D pelvic Sonography, AJR, 2008; 190:626-629.


I. Prior positive CT or other imaging study that is being followed either at intervals to assess therapy or to clarify a finding. This is commonly used for sinus imaging and must meet the criteria for 70486 but may be used for MRI or CT of the chest and abdomen and must meet the corresponding criteria (71250-71270 or 74177-74178, 74160-74170, 72193-72194).

Clinical criteria reviewed/revised: 8/13/2012, 8/17/11, 11/17/10, 12/8/09, 1/21/09

Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
This procedure is considered to be investigational/experimental by the above-mentioned health plan.
This is considered to be a non-covered benefit by Medicare.

References:

I. MRI demonstrating abnormality\textsuperscript{1-3} [One of the following]
   A. Recent breast MRI (within the past 4 weeks) demonstrating an abnormality which requires biopsy
      1. Nonpalpable mass demonstrated on recent MRI (occult on mammography and ultrasound)
         [One of the following]
            a. Enhancement pattern must be non mass like (stippled, linear, clumped)
            b. Lesion is 5 mm or less
            c. Lesion over 5mm or with an enhancement pattern not included in a above must have targeted ultrasound after MRI that does not demonstrate a concordant site to biopsy.
   B. Prostate biopsy\textsuperscript{4-8} [Both]
      a. PSA > 4 ng/ml
      b. Prior ultrasound guided biopsy that does not demonstrate cancer

References:

I. Asymptomatic member 3 years after the placement of silicone implants and every 2 years thereafter

II. To detect silicone implant rupture in symptomatic patients whose ultrasound shows no rupture

III. To detect suspected local tumor recurrence in breast cancer patients who have undergone mastectomy and breast reconstruction with an implant or tissue transfer flaps (rectus, latissimus dorsi or gluteal)

IV. Patient with new diagnosis of breast cancer

V. To detect local tumor recurrence in patients with a personal history of breast cancer and scarring from prior biopsies, radiation or surgery that results in uninterpretable mammography and ultrasound

VI. To detect the extent of residual cancer in the recently postoperative breast with positive pathological margins after incomplete lumpectomy when the patient still desires breast conservation and local re-excision is planned

VII. To localize the site of primary occult breast cancer in patients with adenocarcinoma suggestive of breast cancer discovered as axillary node metastasis or distant metastasis without focal findings on physical examination or on mammography/ultrasonography

VIII. To evaluate patients with high genetic risk of breast cancer [One of the following]
   A. Patient is a confirmed carrier of BRCA1 or BRCA2 gene mutations
   B. Patient has a first-degree relative (mother, sister, daughter) who is a confirmed carrier of the BRCA1 or BRCA2 gene mutation
   C. Male relative with breast cancer
   D. Gail model lifetime risk of 20% or more
   E. One or more relatives with either 2 breast cancers or both breast and ovarian cancer
   F. Two or more first-degree relatives with breast cancer
   G. Family history of breast or ovarian cancer and Ashkenazi Jewish background
   H. Personal or first-degree relative (mother, sister, daughter) with history of Li-Fraumeni syndrome
   I. Personal or first-degree relative (mother, sister, daughter) with history of Cowden syndrome
J. Personal or first-degree relative (mother, sister, daughter) with history of Bannayan-Riley-Ruvalcaba Syndrome

IX. **History of radiation therapy to the chest between the ages of 10 and 30**

X. **Indeterminate breast imaging [One of the following]**
   A. Patients with indeterminate mammograms and sonograms may be approved if there is new onset of [One of the following]
      1. Nipple retraction
      2. Unilateral drainage from the nipple that is bloody or clear
   B. All other requests for breast MRI based on indeterminate mammography and/or ultrasound that do not meet the above criteria must be sent for physician review. All imaging reports should be requested and available for the medical director to review. Only a physician may approve a breast MRI on the basis of abnormal mammography and/or ultrasound.

XI. **Breast MRI for ANY of the following indications is not covered because there is insufficient scientific evidence to support its use:**
   A. To confirm implant rupture in symptomatic patients whose ultrasonography shows rupture especially with implants >10 years old (ultrasound sufficient to proceed with removal)
   B. To screen for breast cancer in women who do not have a high genetic risk
   C. To evaluate breasts before biopsy in an effort to reduce the number of surgical biopsies for benign lesions
   D. To differentiate benign from malignant breast disease, especially clustered microcalcifications
   E. To differentiate cysts from solid lesions (ultrasound indicated)

XII. **Neoadjuvant chemotherapy [One of the following]**
   A. Prior to the start of chemotherapy
      1. No prior breast MRI after the diagnosis of breast cancer
   B. After completion of chemotherapy to evaluate response prior to surgery

XIII. **Personal history of lobular neoplasia including atypical lobular hyperplasia and lobular carcinoma in situ (LCIS)**

XIV. **Personal history of breast cancer**
References:

According to the LCD, “breast MRI studies are to be used very selectively.” The modality should be restricted to:

I. **Beneficiary with new diagnosis of breast cancer**

II. **To detect local tumor recurrence in beneficiary with a personal history of breast cancer and scarring from prior biopsies, radiation or surgery that results in uninterpretable mammography and ultrasound**

III. **To localize the site of primary occult breast cancer in beneficiary with adenocarcinoma suggestive of breast cancer discovered as axillary node metastasis or distant metastasis without focal findings on physical examination or on mammography/ultrasonography**

IV. **Indeterminate breast imaging**
   A. **Beneficiary with indeterminate diagnostic mammogram and sonogram**

V. **Confirm rupture of implants**
References:

1. Local Coverage Determination (LCD) for Breast Imaging Mammography/Breast Echography (Sonography)/Breast MRI/Ductography (L26890), Connecticut, National Government Services, Inc., accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=9&CntrctrType=1%7c9&KeyWord=77058&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=77058&kq=true&bc=IAAAAAAAAAAA&

2. Local Coverage Determination (LCD) for Breast Imaging Mammography/Breast Echography (Sonography)/Breast MRI/Ductography (L31856), Kentucky, CGS Administrators, LLC, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=22&CntrctrType=1%7c9&KeyWord=77058&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=77058&kq=true&bc=IAAAAAAAAAAA&

3. Local Coverage Determination (LCD) for Breast Imaging: Mammography/Breast Echography (Sonography)/Breast MRI/Ductography (L29871), Massachusetts, NHIC, Corp., accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=24&CntrctrType=1%7c9&KeyWord=77058&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=77058&kq=true&bc=IAAAAAAAAAAA&

4. Local Coverage Determination (LCD) for Breast Imaging: Mammography/Breast Echography (Sonography)/Breast MRI/Ductography (L29871), Maine, NHIC, Corp., accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=26&CntrctrType=1%7c9&KeyWord=77058&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=77058&kq=true&bc=IAAAAAAAAAAA&

5. Local Coverage Determination (LCD) for Breast Imaging: Mammography/Breast Echography (Sonography)/Breast MRI/Ductography (L29871), New Hampshire, NHIC, Corp., accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=37&CntrctrType=1%7c9&KeyWord=77058&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=77058&kq=true&bc=IAAAAAAAAAAA&

6. Local Coverage Determination (LCD) for Breast Imaging Mammography/Breast Echography (Sonography)/Breast MRI/Ductography (L26890), New York, National Government Services, Inc., accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=41&CntrctrType=1%7c9&KeyWord=77058&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=77058&kq=true&bc=IAAAAAAAAAAA&

7. Local Coverage Determination (LCD) for Breast Imaging Mammography/Breast Echography (Sonography)/Breast MRI/Ductography (L31856), Ohio, CGS Administrators, LLC, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=42&CntrctrType=1%7c9&KeyWord=77058&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=77058&kq=true&bc=IAAAAAAAAAAA&

8. Local Coverage Determination (LCD) for Breast Imaging: Mammography/Breast Echography (Sonography)/Breast MRI/Ductography (L29871), Rhode Island, NHIC, Corp., accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=47&CntrctrType=1%7c9&KeyWord=77058&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=77058&kq=true&bc=IAAAAAAAAAAA&

9. Local Coverage Determination (LCD) for Breast Imaging: Mammography/Breast Echography (Sonography)/Breast MRI/Ductography (L29871), Vermont, NHIC, Corp., accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=55&CntrctrType=1%7c9&KeyWord=77058&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=77058&kq=true&bc=IAAAAAAAAAAA&

77058, 77059 MRI Breast: Medicare CT, KY, MA, ME, NH, NY, OH, RI, VT

Clinical criteria reviewed/revised: 8/20/12, 7/27/11, 11/17/10
Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11

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I. Marrow reconversion [One of the following]
   A. Severe anemia’s, especially thalassemia
   B. X-ray findings of:
      1. Expansion of medullary flat bones
      2. Bilateral paraspinal masses (particularly in the thorax)
      3. Pleural-based masses

II. Marrow infiltration or replacement [One of the following]
   A. Leukemia
   B. Lymphoma
   C. Metastasis
   D. Primary bone tumors
   E. Plasmacytoma
   F. Multiple myeloma

III. Myeloid depletion
   A. Untreated aplastic anemia

IV. Bone marrow ischemia [One of the following]
   A. Trauma
   B. Sickle cell anemia
   C. Endogenous (Cushing's syndrome) and exogenous corticosteroid excess
   D. Dysbaric osteonecrosis (generally called “the bends”)
   E. Alcoholism
   F. Gaucher's disease

V. Marrow response after radiation therapy
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>78000</td>
<td>Thyroid Uptake Single Determination</td>
</tr>
<tr>
<td>78001</td>
<td>Thyroid Uptake Multiple Determinations</td>
</tr>
<tr>
<td>78003</td>
<td>Thyroid Uptake with Stimulation or Suppression</td>
</tr>
</tbody>
</table>

As per the AMA, these codes have been deleted as of January 1, 2013 and have been redirected to CPT Code 78012.
As per the AMA, these codes have been deleted as of January 1, 2013 and have been redirected to CPT Code 78014.
78010 Thyroid Imaging Only
78011 Thyroid Imaging with Vascular Flow

As per the AMA, these codes have been deleted as of January 1, 2013 and have been redirected to CPT Code 78013.
78012 Thyroid Uptake, Single or Multiple Quantitative Measurement(s) (Including Stimulation, Suppression, or Discharge, When Performed)

This code replaces 78000, 78001, and 78003.

I. Hyperthyroidism and/or subacute thyroiditis1-4 [One of the following]
   A. TSH < 0.40m IU/L and elevated T3 and/or T4
   B. Subclinical hyperthyroidism
      1. TSH < 0.1micro IU/mL
         a. Normal free T4 and T3
   C. Neck pain with no history of trauma and normal thyroid function

References:
1. American Association of Clinical Endocrinologists Thyroid Task Force, Medical guidelines for clinical practice for the evaluation and treatment of hyperthyroidism and hypothyroidism, Endocrine Practice, 2002; 8:457-469.
2. American Thyroid Association Guidelines Task Force, Revised American Thyroid Association management guidelines for patients with thyroid nodules and differentiated thyroid cancer, Thyroid, 2009; 19:1167-1214
Thyroid Imaging (Including Vascular Flow, When Performed)

This code replaces 78010, 78011.

I. Thyroid nodule[^1][^2] [One of the following]
   A. US guided FNA contraindicated
   B. US guided FNA (after at least 2 attempts) reported as showing results that are "equivocal," "indeterminate," "suspicious," "follicular lesion," or "follicular neoplasm"
   C. TSH decreased <0.40mIU/L

II. Substernal goiter and CT or MRI does not clarify the size[^1]
   A. Clinical findings [One of the following]
      1. Exertional dyspnea
      2. Wheezing
      3. Cough
      4. Dysphagia

References:

1. American Association of Clinical Endocrinologists, Associazione Medici Endocrinologi, and European Thyroid Association, Medical guidelines for clinical practice for the diagnosis and management of thyroid nodules, Endocrine Practice, 2010; 16 (Suppl1); 1-43.
This code replaces 78006, 78007.

I. **Hyperthyroidism**<sup>1-3</sup>
   A. TSH < 0.40m IU/L and free T3 (>0.5 ng/dL and/or free T4 >1.8ng/dL
   B. Subclinical hyperthyroidism [Both]
      1. TSH < 0.1mIU/mL
         a. Normal free T4 (.7-1.8 ng/dL) and free T3 (.2-.5ng/dL)

II. **Thyroid nodule CPT**<sup>2,5,6</sup> [One of the following]
   A. US guided FNA contraindicated
   B. US guided FNA (after at least 2 attempts) reported as showing results that are “equivocal,” “indeterminate,” “suspicious,” “follicular lesion,” or “follicular neoplasm”
   C. TSH decreased <0.40mIU/L

III. **Substernal goiter and CT or MRI does not clarify the size**<sup>2,6</sup>
   A. Clinical findings [One of the following]
      1. Exertional dyspnea
      2. Wheezing
      3. Cough
      4. Dysphagia

IV. **Congenital hypothyroidism**<sup>7</sup> [One of the following]
   A. Infant recently diagnosed
   B. Repeat assessment, child of 3 years of age
References:

4. American Association of Clinical Endocrinologists Thyroid Task Force. Medical guidelines for clinical practice for the evaluation and treatment of hyperthyroidism and hypothyroidism, Endocrine Practice, 2002; 8:457-469
I. **Assessment of thyroid remnant after thyroidectomy, prior to ablation**¹⁻⁷ (CPT 78015)

II. **Suspected recurrent or metastatic differentiated or functioning thyroid cancer**¹⁻⁷ [One of the following]

A. Established diagnosis of follicular or papillary carcinoma of the thyroid after thyroidectomy and ablation [One of the following]
   1. Known diagnosis of thyroid cancer and evidence of residual thyroid tissue after thyroidectomy
   2. Any measurable level of thyroglobulin while on thyroid hormone replacement (resulting in TSH secretion being suppressed)
   3. New neck mass, or imaging or FNA demonstrating thyroid cancer metastasis
   4. About 1 to 2 weeks after ablation (may be repeated at any frequency if additional ablations are required, but the each ablation code includes a total body scan. A separate scan should not be approved if an ablation is to be done.)
   5. Annual exams until negative scan
   6. Thyroglobulin levels increasing without Thyrogen® stimulation
   7. Thyroglobulin levels >2 after Thyrogen® stimulation
   8. Thyroglobulin levels after Thyrogen® stimulation are higher than previous levels after stimulation
   9. Anti-thyroglobulin antibody present (scan may be certified every 12 months)

B. Hürthle cell cancer
References:

3. Mazzaferi EL, Kloos RT. Is diagnostic Iodine-131 scanning with recombinant human TSH useful in the follow-up of differentiated thyroid cancer after total thyroid ablation? JCEM, 2002; 87:1490-1498.
I. Enlarged parathyroid gland, parathyroid hyperplasia or suspected parathyroid adenoma or carcinoma\textsuperscript{1-5} [All]
   A. Parathyroid hormone >55 pg/ml
   B. Serum calcium >10.2mg/dL
   C. Preoperative planning

References:

I. **Enlarged parathyroid gland, parathyroid hyperplasia or suspected parathyroid adenoma or carcinoma**¹⁻⁵ [All]
   A. Parathyroid hormone >55 pg/ml
   B. Serum calcium >10.2mg/dL
   C. Preoperative planning

References:

Enlarged parathyroid gland, parathyroid hyperplasia or suspected parathyroid
adenoma or carcinoma\textsuperscript{1-5} \textit{[All]}
\begin{itemize}
\item A. Parathyroid hormone >55 pg/ml
\item B. Serum calcium >10.2mg/dL
\item C. Preoperative planning
\end{itemize}

References:
\begin{enumerate}
\item Greenspan BS, Dillehay GL, Intenzo C. SNM practice guideline for parathyroid scintigraphy 4.0* accessed at http://interactive.snm.org/docs/Parathyroid_Scintigraphy_V4_0_FINAL.pdf, May 11, 2012.
\end{enumerate}
I. **Adrenal mass by CT or MRI**1-15 [One of the following]
   A. Distinguish adenomas from hyperplasia [One of the following]
      1. Elevated cortisol (Cushing's syndrome) [Both]
         a. 24 hr urine free cortisol >100mcg/24hr
         b. No suppression by dexamethasone
      2. Elevated aldosterone and hypertension (systolic >160 and diastolic >100 that is resistant to medication (Conn's syndrome)
         a. Spontaneous or diuretic induced hypokalemia [One of the following]
            i. Serum potassium <3.5mEq/L
         b. Plasma aldosterone to rennin ratio > 20
      3. Elevated androgens [One of the following]
         a. Virilization in women (hirsutism, acne, hair loss, polycystic ovary syndrome)
         b. Waist hip ratio of >.8
         c. Dexamethasone suppression test with the testosterone and DHEAS suppressed
   B. Evaluation of pheochromocytoma [Both]
      1. Hypertension
      2. Abnormal laboratory tests [One of the following]
         a. Urinary VMA >7 mg/24 hours
         b. 24 hour metanephrine-free epinephrine and norepinephrine >100 µg
         c. 24 hour total metanephrine >1.3mg
   C. Evaluation of neuroblastoma [One of the following]
      1. Urinary VMA > 7 mg/24 hours
      2. 24 hour urinary VMA and homovanillic acid
   D. Evaluation of ganglioneuroma
   E. Evaluation of ganglioneuroblastoma
   F. Evaluation of paraganglioneuroma
   G. May have history of MEN (multiple endocrine neoplasms) type IIA (Sipple syndrome) [One of the following]
      1. Medullary carcinoma of thyroid
      2. Pheochromocytoma [See B above]
   H. History of neurofibromatosis
   I. History of von Hippel-Lindau disease
      1. Pheochromocytoma [See B above]

II. **Primary aldosteronism (Conn's syndrome)**3,16 [Both]
   A. Elevated aldosterone [One of the following]
      1. Blood >15 ng/dL
      2. Urine >85 µg/24 hours
   B. Hypertension

III. **Cushing's syndrome**3,17 [Both]
A. Hypertension
B. Elevated serum or urine cortisol levels [One of the following]
   1. Serum >23 µg/dL
   2. 24 hour urinary cortisol >100 µg/24 hours
   3. Overnight dexamethasone suppression test positive

IV. Pheochromocytoma\(^3-10\) [Both]
   A. Hypertension
   B. Abnormal laboratory tests [One of the following]
      1. Urinary VMA > 7 mg/24 hours
      2. 24 hour metanephrine-free epinephrine and norepinephrine >100 µg
      3. 24 hour total metanephrine >1.3mg

V. Hyperandrogenism\(^18-21\) [One of the following]
   A. Virilization in women (hirsutism, acne, hair loss, polycystic ovary syndrome) [One of the following]
      1. Total testosterone >80/ng/dL
      2. Free testosterone >2.4 ng/dL
References:

These studies are rarely performed. Marrow imaging is best done with MRI.

I. Determine extent of marrow in myeloproliferative disorders

II. Detection of ischemic or infarcted regions in sickle cell disease

III. Dysbaric osteonecrosis (generally called “the bends”)

IV. Suspected or known avascular necrosis (osteonecrosis, OCD, AVN, osteochondritis dissecans) with pain and recent x-ray which is either negative or non-diagnostic [Risk factor and physical finding] except for the hip (MRI is the preferred imaging test.) [Risk factor and history or physical finding]

A. Risk factors and pain [One of the following]
   1. Steroid use
   2. Sickle-cell disease
   3. Excessive alcohol use
   4. HIV infection
   5. SLE
   6. Renal transplant
   7. Trauma [One of the following]
      a. Fracture
      b. Dislocation
   8. Coagulopathy
   9. Bisphosphonates
   10. Smoking

B. Shoulder
   1. Physical findings and history [One of the following]
      a. Catching
      b. Locking
      c. Clicking
      d. Grinding
      e. Crepitus
      f. Stiffness
      g. Tenderness
      h. Pain at rest and/or at night
      i. Pain increases with activity

C. Elbow with a negative x-ray and pain
   1. Physical findings and history [One of the following]
a. Catching
b. Locking
c. Clicking
d. Grinding
e. Crepitus
f. Stiffness
g. Tenderness

D. Wrist and hand
1. Physical findings and history [One of the following]
   a. Catching
   b. Locking
c. Clicking
d. Grinding
e. Crepitus
f. Stiffness
g. Tenderness

E. Knee
1. Physical findings and history [One of the following]
   a. Catching
   b. Locking
c. Snapping
d. Inability to bear weight
e. Popping
f. Swelling
g. Tenderness
h. Giving way
i. Stiffness
j. Crepitus

F. Ankle
1. Physical findings and history [One of the following]
   a. Swelling
   b. Stiffness
c. Weakness
d. Symptoms exacerbated by prolonged standing
e. Joint effusion
f. Instability
g. Giving way
h. Catching
i. Grinding

G. Hip [One of the following]
1. Radiography with a collapsed femoral head
2. Pain in the hip(s) with a suspicious but non diagnostic x-ray
3. Hip pain with normal x-ray and a risk factor in A

V. Detection of asymmetric marrow distribution in tumors\(^1\) such as
A. Myeloma
B. Hodgkin’s disease
C. Metastatic disease

VI. Staging of polycythemia rubra vera, myelofibrosis and aplastic anemia

VII. Osteomyelitis¹ (MRI is preferred. Three phase bone scan (78315) may be used if MRI is contraindicated. For chronic osteomyelitis In labeled WBC scan (78805-78807) with a marrow scan may be preferred.) [One of the following]

A. Clinical and laboratory findings [One of the following]
   1. Aural temperature > 38.3°C or 100.9°F
   2. Leukocytosis, WBC >11,500/cu.mm
   3. Blood culture positive
   4. X-ray suggestive of osteomyelitis
   5. ESR > 22 mm/hr
   6. C-reactive protein > 10 mg/L

B. History of diabetes, dialysis or peripheral vascular disease

C. History of penetrating injury or surgery near the involved bone

D. Sinus tract, poor wound or fracture healing

E. Preoperative evaluation of known osteomyelitis

F. Positive probe to bone test

G. Post treatment evaluation

H. Infection of prosthesis or other orthopedic hardware

General statement:
In the presence of orthopedic hardware or prosthesis, normal bone marrow is disrupted and displaced, making interpretations difficult in these regions. Comparison of 111 In-leukocyte localization with 99 mTc-sulfur colloid uptake using combined of sequential 111 In-leukocyte/99mTc colloid images is often necessary. Comparison with adjacent or contralateral regions can also be helpful.

A white-cell scan should be accompanied by a bone marrow scan using Tc 99m sulfur colloid performed either together or sequentially. 111 In-leukocyte uptake is typically increased in the vicinity of infected orthopedic hardware and normal or loose but non-infected prosthesis. Infection is likely when there is abnormal 111 In-leukocyte localization without corresponding 99 mTc-sulfur colloid bone marrow activity (discordant activity).

References:
This is rarely used. For most indications CT is the preferred imaging modality to evaluate the spleen.

I. If CT is not available 78185 can be used [One of the following]
   A. Suspected splenic trauma
   B. Spleen size
   C. LUQ mass
   D. Suspected splenic
      1. Metastases
      2. Cysts
      3. Abscess
      4. Infarct

II. Localization of spleen for radiation ports (if no radiation treatment planning CT is available)

III. Asplenia¹

IV. Suspected functional accessory spleen¹

V. Evaluation of splenic function¹

VI. Non-specific symptoms in LUQ (if neither ultrasound nor CT is available)

References:

I. **Sentinel node mapping**\(^1\text{-}^5 [ONE of the following]**

   A. Must have tissue diagnosis of:
      1. Breast cancer
      2. Melanoma
      3. Merkel cell carcinoma
      4. Head and neck cancer

II. **Lymphedema of the lower extremity**\(^6 [ONE of the following]**

   A. Must have negative venous Doppler including evaluation for valvular insufficiency
   B. History of Milroy’s disease
   C. Previous pelvic lymph node biopsy, dissection

References:

These studies are rarely indicated. CT, US and MRI are generally preferred.

I. Evaluation, if US, CT and MRI are not available or are inconclusive of liver and spleen\(^1,2\) [One of the following]
   A. Masses [One of the following]
      1. Primary tumors
      2. Metastases
      3. Abscess
   B. Size, shape, and position
   C. Trauma

II. Differentiating hepatic hemangiomas and focal nodular hyperplasia (FNH) from other hepatic masses\(^2,3\)

III. Diffuse hepatic disease such as cirrhosis, hepatitis\(^2,3\)

IV. Elevated liver function tests\(^2,3\)

V. Evaluation of hepatic artery catheters for chemotherapy infusion\(^3\)

References:

I. **Acute cholecystitis**\(^{1-3}\) [Both]
   A. US non-diagnostic
   B. Clinical findings
      1. RUQ pain
      2. RUQ tenderness

II. **Chronic cholecystitis**\(^{3,4}\) [Both]
   A. Evidence of gallstones on prior ultrasound
   B. Recurrent right upper quadrant pain with no fever and normal white blood cell count

III. **Suspected bile leak after trauma or surgery**\(^{3,4}\)

IV. **Evaluation of liver function**\(^{3,4}\) [One of the following]
   A. Pre-operative assessment of post-operative remnant
   B. Monitoring of liver regeneration

V. **Assessment of liver transplant**

VI. **Assessment of choledochal cyst**

VII. **Prior to partial hepatectomy**

References:

I. **Acute cholecystitis with ultrasound that does not demonstrate gallstones**\(^1-3\) [All]
   A. Clinical findings [One of the following]
      1. RUQ pain
      2. RUQ tenderness
   B. Gallbladder does not fill on routine HIDA scan (If there is evidence of non-filling of the gallbladder on routine HIDA scan, morphine should be given to complete the study and a change of code to the pharmacologic HIDA should be requested documenting the need for the change of code. A second study should not be performed.)

II. **Chronic cholecystitis**\(^3,4\) [All]
   A. Evidence of gallstones on prior ultrasound
   B. Recurrent right upper quadrant pain
   C. Gallbladder does not fill on routine HIDA scan (If there is evidence of non-filling of the gallbladder on routine HIDA scan, morphine should be given to complete the study and a change of code to the pharmacologic HIDA should be requested documenting the need for the change of code. A second study should not be performed.)

III. **Chronic acalculous cholecystitis**\(^3-5\) [Both]
   A. Recurrent right upper quadrant abdominal pain
   B. No evidence of gallstones on ultrasound

IV. **Dysfunction of sphincter of Oddi**\(^4,5\) [Both]
   A. Recurrent epigastric or right upper quadrant pain
   B. No evidence of gallstones on ultrasound

V. **Calculation of gallbladder ejection fraction**
References:

I. Evaluation of parotid masses to allow preoperative diagnosis of Warthin's tumor\(^1\)

II. Evaluation of salivary gland function in patients with dry mouth\(^1\) [One of the following]
   A. Xerostomia
   B. Sjögren's syndrome
   C. Sialadenitis
   D. After head and neck irradiation

III. Evaluation of children with cerebral palsy

References:

Dysphagia [Both]
A. Chest pain
B. Difficulty swallowing solids initially and then liquids

II. Gastroesophageal reflux
I. **Evaluation of:**¹⁻⁵ [One of the following]
   A. Meckel’s diverticulum
      1. Must have lower GI bleeding, usually bright red blood per rectum
   B. Barrett’s esophagus
      1. Must have clinical history of dyspepsia, esophagitis

II. **Evaluation of pulmonary or mediastinal masses suspected of containing gastric mucosa⁵,⁶**

References:

I. Confirmation of GE reflux
   A. Pediatric [One of the following]
      1. Symptomatic
         a. Vomiting
         b. Belching
         c. Failure to thrive
         d. Refusal of food
         e. Chest pain
      2. Asymptomatic
         a. Family history of Barrett’s esophagus or esophageal carcinoma
   B. Adult [One of the following]
      1. Chronic heartburn
      2. Dysphagia
      3. Family history of Barrett’s esophagus or esophageal carcinoma
Delayed gastric emptying in patients (gastroparesis)\textsuperscript{1-5} [One of the following]

A. Symptoms
1. Nausea
2. Vomiting of old food ingested several hours earlier
3. Bloating
4. Early satiety
5. Postprandial fullness, nausea, vomiting or recurrent aspiration
6. Unexplained poor glucose control in diabetes
7. Gastroesophageal reflux refractory to medical management

Pediatric patients with gastroesophageal reflux or rumination syndrome and suspicion of delayed gastric emptying\textsuperscript{6-8}

Rapid gastric emptying (dumping syndrome)\textsuperscript{3,6}

A. Symptoms [One of the following]
1. Crampy abdominal discomfort
2. Nausea
3. Diarrhea
4. Belching
5. Tachycardia
6. Palpitations
7. Diaphoresis
8. Lightheadedness

References:

8. Altailji, et al, Utility of gastroesophageal reflux study to assess for abnormal gastric emptying in comparison to the dedicated standardized gastric emptying study, J Nuclear Med. 2007;48(suppl. 2)289 P.
78270 Schilling Test

Approve upon request.

Clinical criteria reviewed/revised: 5/8/12, 7/27/11, 11/17/10

Medical Advisory Committee reviewed and approved: 9/19/12, 6/27/12, 9/21/11
78271  B-12 Absorption with Intrinsic Factor

Approve upon request.
I. Evaluation of lower GI bleeding [All]1-3
   A. Hematest positive stool
   B. Indeterminate colonoscopy of lower GI bleeding
   C. Active GI bleeding

References:

3. AGA Technical review on the evaluation and management of occult and obscure gastrointestinal bleeding, Gastroenterology, 2000; 118:201-221.
I. Findings [One of the following]
   A. Decreased plasma albumin or globulins
   B. Peripheral edema or anasarca
   C. No active GI bleeding
I. Evaluation for ectopic gastric mucosa\textsuperscript{1,2} [One of the following]
   A. Active GI bleeding
   B. Unexplained anemia with guaiac positive stools

References:

Approve for evaluation of shunt patency and function in a patient with ascites (LeVeen shunt, Denver shunt).
A SPECT scan may be approved for any of the indications for which a bone scan can be approved. If the request is for 78300 and 78320 then only the 78320 is to be approved if medical necessity is established. If the request is for 78305 or 78306 and 78320 then you may approve 2 codes if medical necessity is established.

I. Tumor\textsuperscript{1-14} [One of the following]

A. Metastases [One of the following]
   1. Breast cancer [One of the following]
      a. Initial evaluation of patient with new diagnosis of breast cancer stage II or higher
      b. Prior evidence of bone metastases
      c. Back pain or hip pain
   2. Prostate cancer [One of the following]
      a. Initial workup of a patient with new diagnosis of prostate cancer if there is a life expectancy of 5 years or more [One of the following]
         i. T1
            01. PSA > 20
         ii. T2 [One of the following]
            01. PSA > 10
            iii. Gleason score > 8
            iv. T3 or T4 symptomatic
      b. Surveillance of prostate cancer [One of the following]
         i. Rising PSA on 2 consecutive tests
         ii. PSA does not fall to undetectable levels after radical prostatectomy
   3. Bone pain with known malignancy
   4. Elevated alkaline phosphatase > 140 with known malignancy
   5. Known bone metastases with pathologic fracture
   6. Known malignancy with back pain and collapsed vertebra
   7. Rising tumor markers
   8. Known Pancoast tumor

B. Initial staging of renal cell carcinoma
   1. Tumor 7 cm in size or larger
   2. Locally advanced tumor
   3. Bone pain
   4. Elevated alkaline phosphatase > 140

C. Initial staging of small cell lung cancer if PET/CT is not done

D. Primary bone tumor [One of the following]
   1. Abnormality discovered on x-ray, and age 40 or older
   2. Known primary bone malignancy evaluation for extent and metastases if PET/CT not done
   3. Osteosarcoma following chemotherapy for restaging
4. Known bone metastases with pathologic fracture
5. Known malignancy with back pain and collapsed vertebra
6. Pancoast tumor

II. Suspected fracture\(^2,15\) (For stress fractures may request three phase scan, 78315.) [One of the following]
   A. Pain at site [One of the following]
      1. Decreased with rest
      2. Worsened with activity
   B. Two negative x-rays at least 10 days apart for all suspected fractures \textit{except} hip or spine fracture
   C. Osteoporosis with suspected fracture
   D. Long term steroid therapy with suspected fracture

III. Suspected or known avascular necrosis (osteonecrosis, OCD, AVN, osteochondritis dissecans) with pain and recent x-ray which is either negative or nondiagnostic \textit{[Risk factor and physical finding]} except for the hip\(^2,16-20\) (MRI is the preferred imaging test.) \textit{[Risk factor and history or physical finding]}
   A. Risk factors and pain [One of the following]
      1. Steroid use
      2. Sickle cell disease
      3. Excessive alcohol use and smoking
      4. HIV infection
      5. SLE
      6. Renal transplant
      7. Trauma [One of the following]
         a. Fracture
         b. Dislocation
      8. Coagulopathy
      9. Bisphosphonates
   B. Shoulder
      1. Physical findings and history [One of the following]
         a. Catching
         b. Locking
         c. Clicking
         d. Grinding
         e. Crepitus
         f. Stiffness
         g. Tenderness
         h. Pain at rest and/or at night
         i. Pain increases with activity
   C. Elbow with a negative x-ray and pain
      1. Physical findings and history [One of the following]
         a. Catching
         b. Locking
         c. Clicking
d. Grinding
e. Crepitus
f. Stiffness
g. Tenderness

D. Wrist and hand
1. Physical findings and history [One of the following]
   a. Catching
   b. Locking
c. Clicking
d. Grinding
e. Crepitus
f. Stiffness
g. Tenderness

E. Knee
1. Physical findings and history [One of the following]
   a. Catching
   b. Locking
c. Snapping
d. Inability to bear weight
e. Popping
f. Swelling
g. Tenderness
h. Giving way
   i. Stiffness
   j. Crepitus

F. Ankle
1. Physical findings and history [One of the following]
   a. Swelling
   b. Stiffness
c. Weakness
d. Symptoms exacerbated by prolonged standing
e. Joint effusion
f. Instability
g. Giving way
h. Catching
   i. Grinding

G. Hip [One of the following]
1. Radiography with a collapsed femoral head
2. Pain in the hip(s) with a suspicious but non diagnostic x-ray
3. Hip pain with normal x-ray and a risk factor in A
4. Stress fracture of the femoral neck
5. Pain increases with activity.
6. Pain may be in the groin or ipsilateral buttock.
IV. Osteomyelitis\textsuperscript{2,21-24} (MRI is preferred. Three phase bone scan, 78315, may be used if MRI is contraindicated. For chronic osteomyelitis Indium labeled WBC scan, 78805-78807, with a marrow scan may be preferred.) [One of the following]

A. Clinical and laboratory findings [One of the following]
   1. Aural temperature > 38.3° C or 100.9° F
   2. Leukocytosis, WBC >11,500/cu.mm
   3. Blood culture positive
   4. X-ray suggestive of osteomyelitis
   5. ESR > 22mm/hr
   6. C-reactive protein > 10 mg/L

B. History of diabetes, dialysis or peripheral vascular disease
C. History of penetrating injury or surgery near the involved bone
D. Sinus tract, poor wound or fracture healing
E. Preoperative evaluation of known osteomyelitis
F. Positive probe to bone test
G. Post treatment evaluation

V. Complex regional pain syndrome or reflex sympathetic dystrophy\textsuperscript{2,25} [All of the following] (Three phase bone scan, 78315, is preferred.)

A. Local pain and tenderness
B. Flushing or diminished blood flow
C. Skin changes

VI. Myositis ossificans\textsuperscript{26,27} (Three phase bone scan, 78315, may be requested.)

A. Heterotopic calcification seen on x-ray [One of the following]
   1. Recent trauma or surgery
   2. Pain swelling and erythema at site

VII. Suspected frostbite\textsuperscript{28} (Three phase bone scan, 78315, is preferred.)

VIII. Suspected child abuse\textsuperscript{29}

IX. Paget’s disease [One of the following]

A. Deformity of skull, jaw or clavicle
B. Aching pain, worse at night, especially in pelvis
C. Elevated alkaline phosphatase

X. Radiographically occult bone disease – A bone scan may be used for confirmation of the presence of disease.

XI. Spondylolysis\textsuperscript{23,24,30} – SPECT 78320 is preferred.

References:

Clinical criteria reviewed/revised: 8/23/2012 7/27/11, 11/17/10, 7/21/10, 11/18/09, 1/21/09

Medical Advisory Committee reviewed and approved: 9/21/11
I. Suspected frostbite

II. Suspected stress fracture [All]
   A. Insidious or gradual onset of activity related pain
   B. Pain on palpation or range of motion (ROM)
   C. Initial radiographs (x-rays) normal

III. Suspected or known osteomyelitis (MRI is preferred. Three phase bone scan, 78315, may be used if MRI is contraindicated.) [One of the following]
   A. Clinical and laboratory findings [One of the following]
      1. Aural temperature > 38.3° C or 100.9° F
      2. Leukocytosis, WBC >11,500/cu.mm
      3. Blood culture positive
      4. X-ray suggestive of osteomyelitis
      5. ESR > 22mm/hr
      6. C-reactive protein > 10 mg/L
   B. History of diabetes, dialysis or peripheral vascular disease
   C. History of penetrating injury or surgery near the involved bone of the following
   D. Sinus tract, poor wound or fracture healing
   E. Preoperative evaluation of known osteomyelitis
   F. Positive probe to bone test
   G. Post treatment evaluation

IV. Loosening of prosthesis x-ray non-diagnostic
   A. Pain at site, worsened with weight bearing
   B. Limp or antalgic gait

V. Myositis ossificans
   A. Heterotopic calcification seen on x-ray [One of the following]
      1. Recent trauma or surgery
      2. Pain, swelling and erythema at site

VI. Complex regional pain syndrome or reflex sympathetic dystrophy [All]
   A. Local pain and tenderness
   B. Flushing or diminished blood flow
   C. Skin changes
References:

I. **Tumor**[^1] [One of the following]

A. Metastases [One of the following]
   1. Breast cancer [One of the following]
      a. Initial evaluation of patient with new diagnosis of breast cancer stage II or higher
      b. Prior evidence of bone metastases
      c. Back pain or hip pain
   2. Prostate cancer [One of the following]
      a. Initial workup of a patient with new diagnosis of prostate cancer if there is a life expectancy of 5 years or more [One of the following]
         i. T1
            01. PSA > 20
         ii. T2 [One of the following]
            01. PSA >10
            02. Gleason score >8
         iii. T3 or T4
         iv. Bone pain with any T and any PSA and any Gleason score
      b. Surveillance of prostate cancer [One of the following]
         i. Rising PSA on 2 consecutive tests
         ii. PSA does not fall to undetectable levels after radical prostatectomy
   3. Bone pain with known malignancy
   4. Elevated alkaline phosphatase > 140 with known malignancy
   5. Rising tumor markers
   6. Known bone metastases with pathologic fracture
   7. Known malignancy with back pain and collapsed vertebra
   8. Known Pancoast tumor

B. Initial staging of proven renal cell carcinoma

C. Initial staging of small cell lung cancer (SCLC) or non small cell carcinoma [Both]
   1. PET scan not done and not planned
   2. Must have documented histologic diagnosis of lung cancer

D. Primary bone tumor [One of the following]
   1. Abnormality discovered on x-ray, CT or MRI
   2. Known primary bone malignancy evaluation for extent and metastases
   3. Osteosarcoma following chemotherapy 6 month follow-up examination

II. **Suspected avascular necrosis (osteonecrosis, osteochondritis dissecans, OCD)**[^2] [Risk factor and physical and/or history]

A. Risk factors [One of the following]
   1. Steroid use
   2. Sickle cell disease
   3. Excessive alcohol use
   4. HIV infection
5. SLE
6. Renal transplant
7. Trauma [One of the following]
   a. Fracture
   b. Dislocation
8. Coagulopathy
9. Bisphosphonates
10. Smoking
B. Shoulder with a negative x-ray and pain
    1. Physical findings and/or history
       a. Catching
       b. Locking
       c. Clicking
       d. Grinding
       e. Stiffness
C. Elbow with a negative x-ray and pain
    1. Physical findings [One of the following]
       a. Catching
       b. Locking
       c. Clicking
       d. Grinding
       e. Crepitus
       f. Stiffness
       g. Tenderness
D. Wrist and hand with a negative x-ray and pain [One of the following]
    1. Physical findings and/or history [One of the following]
       a. Catching
       b. Locking
       c. Clicking
       d. Grinding
       e. Crepitus
       f. Stiffness
       g. Tenderness
       h. Flexion contractures
E. Knee with negative x-ray [One of the following]
    1. Pain and/or swelling
    2. Catching or locking or giving way
F. Ankle with negative x-ray
    1. Physical findings and/or history [One of the following]
       a. Swelling
       b. Stiffness
       c. Weakness
       d. Symptoms exacerbated by prolonged standing
       e. Joint effusion
       f. Instability
G. Hip [One of the following]
    1. Pain in the groin or buttocks
2. Pain increasing with ambulation
3. Pain with internal rotation
4. Limited range of motion

III. Osteomyelitis (See CPT 78315)\textsuperscript{14,15}

IV. Loosening of prosthesis X-ray nondiagnostic [One of the following]\textsuperscript{16}
A. Pain at site, worsened with weight bearing
B. Limp or antalgic gait

V. Myositis ossificans\textsuperscript{17,18} (Three phase bone scan, 78315, may be requested.) [Both]
A. Heterotopic calcification seen on x-ray
   1. Recent trauma or surgery
   2. Pain swelling and erythema at site

VI. Suspected frostbite\textsuperscript{19} (Three phase bone scan, 78315, may be requested.)

VII. Suspected child abuse\textsuperscript{20} [One of the following]
A. For most children, plain x-rays are suggested as the initial examination.
B. If false negative x-ray exam is suspected scintigraphy may be certified.

VIII. Paget’s disease [One of the following]
A. Deformity of skull, jaw or clavicle
B. Aching pain, worse at night, especially in pelvis
C. Elevated alkaline phosphatase

IX. Suspected spondylolysis\textsuperscript{21-24}
A. Back pain

X. Suspected osteoid osteoma
A. Pain which is more severe at night and relieved with aspirin

XI. Facet arthropathy
A. Ankylosing spondylitis
B. Osteoarthritis
C. Rheumatoid arthritis
References:


78320 Nuclear Bone Scan SPECT

Clinical criteria reviewed/revised: 7/20/12, 5/12/12, 7/27/11, 11/17/10, 7/21/10
Medical Advisory Committee reviewed and approved: 9/19/12, 6/27/12, 9/21/11

Page 562 of 670
I. Calculation of left and right ventricular ejection fractions
II. Assessment of wall motion
III. Quantitation of right to left shunts
This is an obsolete examination. MRA, CTA or Duplex Doppler ultrasounds are the preferred studies.
I. **Evaluation prior to non-cardiac surgery [One of the following]**
   A. With current cardiac symptoms [One of the following]
      1. Prior documentation of coronary artery disease– See section II
      2. No prior documentation of coronary artery disease– See section V
   B. Without current cardiac symptoms
      1. Intermediate or high risk non-cardiac surgery [One of the following]
         a. Inability to reach four mets on treadmill exercise stress testing
         b. If able to reach four mets on treadmill exercise stress testing, one of the following must be documented
            i. Creatinine 2.0 or greater
            ii. Diabetes
            iii. Congestive heart failure
            iv. Known coronary artery disease

II. **Evaluation of known coronary artery disease or equivalent [One of the following]**
   A. Recent hospitalization for acute myocardial infarction, acute coronary syndrome, or unstable angina [One of the following]
      1. No cardiac catheterization, imaging stress test or cardiac CT angiogram during or since the hospitalization
      2. Recurrent chest pain or shortness of breath since discharge if in-patient testing was performed
      3. Percutaneous coronary intervention or coronary artery bypass surgery during the hospitalization [One of the following]
         a. No nuclear or echo stress test was performed since the revascularization
         b. A nuclear or echo stress test was performed, but new chest pain or shortness of breath has developed since that study
   B. No recent hospitalization for acute myocardial infarction, acute coronary syndrome, or unstable angina and documentation of a prior abnormal imaging stress test, cardiac catheterization, cardiac CT angiogram, percutaneous coronary intervention or bypass surgery, carotid stenosis or stroke, peripheral artery disease, aortic aneurysm, diabetes or coronary calcification on CT scan [One of the following]
      1. New chest pain or shortness of breath
      2. No new chest pain or shortness of breath [One of the following]
         a. Coronary artery bypass surgery or percutaneous coronary intervention was performed in the last two years and no imaging stress test has been performed after the revascularization
b. No coronary artery bypass surgery or percutaneous coronary intervention was performed in the last two years [One of the following]
   i. No cardiac catheterization, cardiac CT angiogram, or imaging stress test was performed in the past
   ii. Cardiac catheterization, cardiac CT angiogram, or imaging stress test was performed two or more years ago

   c. Prior documentation of congenital coronary arterial anomalies by cardiac catheterization or cardiac CT angiography and no imaging stress test has been performed since those studies

   III. Evaluation of newly diagnosed congestive heart failure
      A. No heart catheterization, imaging stress test or cardiac CT angiogram was performed since the diagnosis of congestive heart failure

   IV. Evaluation of newly diagnosed cardiomyopathy
      A. The ejection fraction is less than 50 percent and no heart catheterization, imaging stress test or cardiac CT angiogram was performed since the new diagnosis of cardiomyopathy

   V. Evaluation of suspected coronary artery disease symptoms [One of the following]
      A. Evaluation of documented ventricular tachycardia
      B. Evaluation of chest pain equivalent [One of the following]
         1. Pre-test probability assessment – high risk
         2. Pre-test probability assessment – low or intermediate risk
            a. Requirement for pharmacologic test due to inability to perform an exercise stress test
            b. Electrocardiogram demonstrates Wolff-Parkinson-White syndrome, complete left bundle branch block, ventricular paced rhythm, or one mm or more ST-J depression with horizontal or downsloping ST segments for 80 msec after the J point
            c. Currently taking digoxin/Lanoxin®
            d. Routine exercise stress test documents [One of the following]
               i. One mm or more ST-J depression with horizontal or downsloping ST segments for 80 msec after the J point
               ii. Ventricular tachycardia, multifocal premature ventricular contractions or triplets
               iii. Heart block
               iv. Drop in systolic blood pressure of 10 mmHg or more
               v. Inability to attain 85 percent of the maximum predicted heart rate
               vi. Chest pain
      C. Evaluation of syncope [Both of the below are required]
         1. Diabetes
         2. ATP* risk calculation 10 percent or more and no imaging stress test has been performed in the last two years

   VI. Asymptomatic screening for coronary artery disease) (Non-Medicare cases only) [One of the following]
      A. Assessment based on coronary risk factors [One of the following]
         1. Diabetes and no imaging stress test in the last two years
2. ATP* III risk calculation 20 percent or more and no imaging stress test in the last two years

B. Assessment based on uninterpretable electrocardiogram (Wolff-Parkinson-White syndrome, complete left bundle branch block, ventricular paced rhythm, or one mm or more ST-J depression with horizontal or downsloping ST segments for 80 msec after the J point) [One of the following]
   1. New electrocardiographic finding
   2. Chronic electrocardiographic finding
      a. No imaging stress test has been performed in two years

C. Assessment based on abnormal calcium score [One of the following]
   1. Calcium score 100-400 [One of the following]
      a. Diabetes and no imaging stress test in the last two years
      b. ATP* risk calculation 20 percent or more and no imaging stress test in the last two years
   2. Calcium score over 400
      a. No imaging stress test in the last 2 years

D. Assessment based on elevated Troponin
   1. The elevated Troponin documented less than four weeks ago and no imaging stress test, cardiac CT angiogram or catheterization has been performed within the last four weeks

E. Assessment based on abnormal routine exercise stress test (see V.2.D for definition)

* Control/Click here for an online ATP risk calculator

**Rule 1: Determination of pretest probability for coronary disease based on chest pain**

<table>
<thead>
<tr>
<th>Pre-Test Probability of CAD by Age, Gender, and Symptoms</th>
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<td>Age- Years</td>
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High: Greater than 90% pre-test probability
Intermediate: Between 10% and 90% pre-test probability
Low: Between 5% and 10% pre-test probability
Very Low: Less than 5% pre-test probability

Typical angina (definite): 1) Substernal chest pain or discomfort that is 2) provoked by exertion or emotional stress and 3) relieved by rest and/or nitroglycerin.
Atypical angina (probable): Chest pain or discomfort that lacks one of the characteristics of definite or typical angina.
Non-anginal chest pain: Chest pain or discomfort that meets one or none of the typical angina characteristics.
References:


Medicare LCD References:


78451, 78452, 78453, 78454 Myocardial Perfusion Imaging

Clinical criteria reviewed/revised: 5/18/12, 9/14/11, 4/11/11

Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
I. **Evaluation prior to non-cardiac surgery**
   A. With current cardiac symptoms
      1. Prior documentation of coronary artery disease – See section II
      2. No prior documentation of coronary artery disease – See section V
   B. Without current cardiac symptoms
      1. Intermediate or high risk non-cardiac surgery (aortic and peripheral vascular surgery; intraperitoneal and intrathoracic surgery carotid endarterectomy, head and neck surgery, orthopedic surgery, prostate surgery) [One of the following]
         a. Inability to reach four mets on treadmill exercise stress testing
         b. If able to reach four mets on treadmill exercise stress testing, one of the following must be documented:
            i. Creatinine 2.0 or greater
            ii. Diabetes
            iii. Congestive heart failure
            iv. Known coronary artery disease

II. **Evaluation of known coronary artery disease or equivalent** [One of the following]
   A. Recent hospitalization for acute myocardial infarction, acute coronary syndrome, or unstable angina [One of the following]
      1. No cardiac catheterization, imaging stress test or cardiac CT angiogram during or since the hospitalization
      2. Recurrent chest pain or shortness of breath since discharge if in-patient testing was performed
      3. Percutaneous coronary intervention or coronary artery bypass surgery during the hospitalization [One of the following]
         a. No nuclear or echo stress test was performed since the revascularization
         b. A nuclear or echo stress test was performed, but new chest pain or shortness of breath has developed since that study
   B. No recent hospitalization for acute myocardial infarction, acute coronary syndrome, or unstable angina and documentation of a prior abnormal imaging stress test, cardiac catheterization, cardiac CT angiogram, percutaneous coronary intervention or bypass surgery, carotid stenosis or stroke, peripheral artery disease, aortic aneurysm, diabetes or coronary calcification on CT scan [One of the following]
      1. New chest pain or shortness of breath
2. No new chest pain or shortness of breath [One of the following]
   a. Coronary artery bypass surgery or percutaneous coronary intervention was performed in the last two years and no imaging stress test has been performed after the revascularization
   b. No coronary artery bypass surgery or percutaneous coronary intervention was performed in the last two years [One of the following]
      i. No cardiac catheterization, cardiac CT angiogram, or imaging stress test was performed in the past
      ii. Cardiac catheterization, cardiac CT angiogram, or imaging stress test was performed two or more years ago
   c. Prior documentation of congenital coronary arterial anomalies by cardiac catheterization or cardiac CT angiography and no imaging stress test has been performed since those studies

III. Assessment of congenital anomalies of the coronary arteries

IV. Evaluation of newly diagnosed congestive heart failure
   A. No heart catheterization, imaging stress test or cardiac CT angiogram was performed since the diagnosis of congestive heart failure

V. Evaluation of newly diagnosed cardiomyopathy
   A. The ejection fraction is less than 50 percent and no heart catheterization, imaging stress test or cardiac CT angiogram was performed since the new diagnosis of cardiomyopathy.

VI. Evaluation of suspected coronary artery disease with symptoms [One of the following]
   A. Evaluation of documented ventricular tachycardia
   B. Evaluation of chest pain equivalent [One of the following]
      1. Pre-test probability assessment – high risk
      2. Pre-test probability assessment – low or intermediate risk
         a. Requirement for pharmacologic test due to inability to perform an exercise stress test
         b. Electrocardiogram demonstrates Wolff-Parkinson-White syndrome, complete left bundle branch block, ventricular paced rhythm, or one mm or more ST-J depression with horizontal or downsloping ST segments for 80 msec after the J point
         c. Currently taking digoxin/Lanoxin®
         d. Routine exercise stress test documents [One of the following]
            i. One mm or more ST-J depression with horizontal or downsloping ST segments for 80 msec after the J point
            ii. Ventricular tachycardia, multifocal premature ventricular contractions or triplets
            iii. Heart block
            iv. Drop in systolic blood pressure of 10 mmHg or more
            v. Inability to attain 85 percent of the maximum predicted heart rate
            vi. Chest pain
   C. Evaluation of syncope [both]
      1. Diabetes
2. ATP* risk calculation 10 percent or more and no imaging stress test has been performed in the last two years

* Control-click here for an online ATP risk calculator.

**Rule 1: Determination of pretest probability for coronary disease based on chest pain**

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<th>Pre-Test Probability of CAD by Age, Gender, and Symptoms</th>
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High: Greater than 90% pre-test probability
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Typical angina (definite): 1) Substernal chest pain or discomfort that is 2) provoked by exertion or emotional stress and 3) relieved by rest and/or nitroglycerin.

Atypical angina (probable): Chest pain or discomfort that lacks one of the characteristics of definite or typical angina.

Non-anginal chest pain: Chest pain or discomfort that meets one or none of the typical angina characteristics.

References:

Medicare LCD References:


I. Evaluation prior to non-cardiac surgery [One of the following]
   A. With current cardiac symptoms [One of the following]
      1. Prior documentation of coronary artery disease – see section II
      2. No prior documentation of coronary artery disease – see section V
   B. Without current cardiac symptoms
      1. Intermediate or high risk non-cardiac surgery [One of the following]
         a. Inability to reach four mets on treadmill exercise stress testing
         b. If able to reach four mets on treadmill exercise stress testing, one of the following must be documented
            i. Creatinine 2.0 or greater
            ii. Diabetes
            iii. Congestive heart failure
            iv. Known coronary artery disease

II. Evaluation of known coronary artery disease or equivalent [One of the following]
   A. Recent hospitalization for acute myocardial infarction, acute coronary syndrome, or unstable angina [One of the following]
      1. No cardiac catheterization, imaging stress test or cardiac CT angiogram during or since the hospitalization
      2. Recurrent chest pain or shortness of breath since discharge if in-patient testing was performed
      3. Percutaneous coronary intervention or coronary artery bypass surgery during the hospitalization
         a. No nuclear or echo stress test was performed since the revascularization
         b. A nuclear or echo stress test was performed, but new chest pain or shortness of breath has developed since that study
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      1. New chest pain or shortness of breath or change in symptoms
      2. No new chest pain or shortness of breath [One of the following]
a. Coronary artery bypass surgery or percutaneous coronary intervention was performed in the last two years and no imaging stress test has been performed after the revascularization
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   i. No cardiac catheterization, cardiac CT angiogram, or imaging stress test was performed in the past
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   A. Evaluation of documented ventricular tachycardia
   B. Evaluation of chest pain equivalent [One of the following]
      1. Pre-test probability assessment – high risk
      2. Pre-test probability assessment – low or intermediate risk [One of the following]
         a. Requirement for pharmacologic test due to inability to perform an exercise stress test
         b. Electrocardiogram demonstrates Wolff- Parkinson-White syndrome, complete left bundle branch block, ventricular paced rhythm, or one mm or more ST-J depression with horizontal or downsloping ST segments for 80 msec after the J point
         c. Currently taking Digoxin/Lanoxin
         d. Routine exercise stress test documents [One of the following]
            i. One mm or more ST-J depression with horizontal or downsloping ST segments for 80 msec after the J point
            ii. Ventricular tachycardia, multifocal premature ventricular contractions or triplets
            iii. Heart block
            iv. Drop in systolic blood pressure of 10 mmHg or more
            v. Inability to attain 85 percent of the maximum predicted heart rate
            vi. Chest pain
   C. Evaluation of syncope [One of the following]
      1. Diabetes
      2. ATP* risk calculation 10 percent or more and no imaging stress test has been performed in the last two years

IV. Evaluation of newly diagnosed congestive heart failure
   A. No heart catheterization, imaging stress test or cardiac CT angiogram was performed since the diagnosis of congestive heart failure

V. Evaluation of hypertrophic or dilated cardiomyopathy

VI. Abnormal or non diagnostic standard exercise stress test
VII. Ventricular wall motion abnormality on other imaging and there is a need for perfusion imaging

VIII. Assessment of functional capacity

IX. Viability
A. Follow up myocardial perfusion scan within 48 hours of an abnormal myocardial perfusion scan to determine if a perfusion defect noted on the initial study is scar or viable myocardium is included in 78452 by CPT code definition and a second MPI code is not appropriate
B. Recent documented myocardial infarction to determine extent of disease or scar

X. Assessment of congenital anomalies of the coronary arteries

XI. Post-transplant cardiac disease
A. Assessment of coronary arteriopathy
B. Ventricular dysfunction with post transplant rejection

XII. Following reperfusion (CABG, PTCA or thrombolysis to determine effectiveness of the intervention)

Rule 1: Determination of pretest probability for coronary disease based on chest pain

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<thead>
<tr>
<th>Pre-Test Probability of CAD by Age, Gender, and Symptoms</th>
<th>Typical/Definite Angina Pectoris</th>
<th>Atypical/Probable Angina Pectoris</th>
<th>Non-anginal Chest Pain</th>
<th>Asymptomatic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age- Years</td>
<td>Gender</td>
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<tr>
<td>30-39</td>
<td>Men Intermediate</td>
<td>Intermediate</td>
<td>Low</td>
<td>Very low</td>
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<td></td>
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References:


7. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine: Myocardial Perfusion Imaging and Cardiac Blood Pool Studies (L28246), Palmetto GBA, Southern California, accessed at [http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=67&CntrcrType=1%7c9&KeyWord=78451&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78451&kq=true&bc=IAAAAAAA].


9. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine: Myocardial Perfusion Imaging and Cardiac Blood Pool Studies (L28246), Palmetto GBA, Nebraska, accessed at [http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=40&CntrcrType=1%7c9&KeyWord=78451&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78451&kq=true&bc=IAAAAAAA].


12. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine: Myocardial Perfusion Imaging and Cardiac Blood Pool Studies (L31072), Wisconsin Physicians Service Insurance Corporation, Missouri, accessed at [http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=29&CntrcrType=1%7c9&KeyWord=78451&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78451&kq=true&bc=IAAAAAAA].

13. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine: Myocardial Perfusion Imaging and Cardiac Blood Pool Studies (L31072), Wisconsin Physicians Service Insurance Corporation, Nebraska, [http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=36&CntrcrType=1%7c9&KeyWord=78451&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78451&kq=true&bc=IAAAAAAA].

78451, 78452, 78453, 78454 Myocardial Perfusion Imaging: 
Medicare AL, CA, GA, HI, IA, IL, IN, KS, MI, MN, MO, NE, NV, TN, WI

Clinical criteria reviewed/revised: 12/18/2012, 9/14/11, 4/11/11
Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
These are obsolete examinations that have been largely superseded by vascular ultrasound, MRA and CTA. They may be of occasional value when these newer examinations are not feasible.
PET Myocardial – Metabolic
PET Myocardial Perfusion Imaging, Rest or Stress
PET Myocardial Perfusion Imaging, Rest and Stress

78491 and 78492 are also referred to as a rubidium study stress test.

I. Nondiagnostic nuclear or echo stress testing
   A. Cardiac catheterization is not planned AND
   B. Any of the following results were present on the nuclear or echo stress testing
      1. Normal treadmill electrocardiogram with reversible perfusion abnormality
      2. Equivocal
      3. Positive treadmill electrocardiogram with normal imaging
      4. Technically uninterpretable

II. Evaluation prior to noncardiac surgery [One of the following]
   A. With current cardiac symptoms
      1. Prior documentation of coronary artery disease – See section III
      2. No prior documentation of coronary artery disease – See section VI
   B. Without current cardiac symptoms
      1. Intermediate or high-risk noncardiac surgery [One of the following]
         a. Inability to reach four mets on treadmill exercise stress testing
         b. If able to reach four mets on treadmill exercise stress testing; one of the following must be documented [One of the following]
            i. Creatinine 2.0 or greater
            ii. Diabetes
            iii. Congestive heart failure
            iv. Known coronary artery disease

III. Evaluation of known coronary artery disease or equivalent [One of the following]
   A. Recent hospitalization for acute myocardial infarction, acute coronary syndrome, or unstable angina
      1. No cardiac catheterization, imaging stress test or cardiac CT angiogram during or since the hospitalization
      2. Recurrent chest pain or shortness of breath since discharge
      3. Percutaneous coronary intervention or coronary artery bypass surgery during the hospitalization [One of the following]
         a. No nuclear or echo stress test was performed since the revascularization.
         b. A nuclear or echo stress test was performed, but new chest pain or shortness of breath has developed since that study.
   B. No recent hospitalization for acute myocardial infarction, acute coronary syndrome, or unstable angina [One of the following]
      1. New chest pain or shortness of breath
2. No new chest pain or shortness of breath [One of the following]
   a. Coronary artery bypass surgery or percutaneous coronary intervention was performed in the last two years and no imaging stress test has been performed after the revascularization.
   b. No coronary artery bypass surgery or percutaneous coronary intervention was performed in the last two years and documentation of a prior abnormal imaging stress test, cardiac catheterization, cardiac CT angiogram, percutaneous coronary intervention or bypass surgery, carotid stenosis or stroke, peripheral artery disease, aortic aneurysm, diabetes, or coronary calcification on CT scan. [One of the following]
      i. No cardiac catheterization, cardiac CT angiogram, or imaging stress test was performed in the past.
      ii. Cardiac catheterization, cardiac CT angiogram, or imaging stress test was performed two or more years ago.
   c. Prior documentation of congenital coronary arterial anomalies by cardiac catheterization or cardiac CT angiography and no imaging stress test has been performed since those studies

IV. Evaluation of newly diagnosed congestive heart failure
   A. No heart catheterization, imaging stress test or cardiac CT angiogram was performed since the diagnosis of congestive heart failure.

V. Evaluation of newly diagnosed cardiomyopathy
   A. The ejection fraction is less than 50 percent, and no heart catheterization, imaging stress test or cardiac CT angiogram was performed since the new diagnosis of cardiomyopathy

VI. Evaluation of suspected coronary artery disease symptoms [One of the following]
   A. Evaluation of documented ventricular tachycardia
   B. Evaluation of chest pain equivalent [One of the following]
      1. Pre-test probability assessment – high risk
      2. Pre-test probability assessment – low or intermediate risk
         a. Pharmacologic stress test (Medicare only)
         b. Pharmacologic stress test (commercial) [One of the following]
            i. Inability to attain four mets on treadmill testing
            ii. Inability to attain 85% of the maximal predicted heart rate
            iii. Inability to exercise due to orthopedic or neurologic conditions
         c. Electrocardiogram demonstrates Wolff-Parkinson-White syndrome, complete left bundle branch block, ventricular-paced rhythm, or 1 mm or more ST-J depression with horizontal or downsloping ST segments for 80 msec after the J point
         d. Currently taking digoxin/Lanoxin®
         e. Routine exercise stress test documents [One of the following]
            i. 1 mm or more ST-J depression with horizontal or downsloping ST segments for 80 msec after the J point
            ii. Ventricular tachycardia, multifocal premature ventricular contractions or triplets
            iii. Heart block
            iv. Drop in systolic blood pressure of 10 mmHg or more
v. Inability to attain 85% of the maximum predicted heart rate
vi. Chest pain

C. Evaluation of syncope [One of the following]
   1. Diabetes
   2. ATP* risk calculation 10% or more and no imaging stress test has been performed in the last two years

VII. Asymptomatic screening for coronary artery disease [One of the following]
A. Assessment based on coronary risk factors [One of the following]
   1. Diabetes and no imaging stress test in the last two years
   2. ATP* III risk calculation 20% or more and no imaging stress test in the last two years
B. Assessment based on uninterpretable electrocardiogram (Wolff-Parkinson-White syndrome, complete left bundle branch block, ventricular paced rhythm, or 1 mm or more ST-J depression with horizontal or downsloping ST segments for 80 msec after the J point) [One of the following]
   1. New electrocardiographic finding
   2. Chronic electrocardiographic finding
      a. No imaging stress test has been performed in two years
C. Assessment based on abnormal calcium score [One of the following]
   1. Calcium score 100-400
      a. Diabetes and no imaging stress test in the last two years
      b. ATP* risk calculation 20% or more and no imaging stress test in the last two years
   2. Calcium score over 400
      a. No imaging stress test in the last two years
D. Assessment based on elevated troponin
   1. The elevated troponin documented less than four weeks ago and no imaging stress test, cardiac CT angiogram or catheterization has been performed within the last four weeks.
E. Assessment based on abnormal routine exercise stress test (see VI. B. 2. e. for definition)

*Control-click here for an online ATP risk calculator.

### Rule 1: Determination of pretest probability for coronary disease based on chest pain

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Typical angina (definite): 1) Substernal chest pain or discomfort that is 2) provoked by exertion or emotional stress and 3) relieved by rest and/or nitroglycerin.

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References:


Medicare NCD References:


78459, 78491, 78492 PET Myocardial

Clinical criteria reviewed/revised: 8/20/12, 9/14/11, 4/11/11

Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
78491 and 78492 are also referred to as a rubidium study stress test. This test may be used instead of myocardial perfusion imaging but not in addition unless the myocardial perfusion study was inconclusive (equivocal, technically uninterpretable or discordant with the beneficiary’s other clinical data.)

I. Non-diagnostic nuclear or echo stress testing
   A. Cardiac catheterization is not planned AND
   B. Any of the following results were present on the nuclear or echo stress testing
      1. Normal treadmill electrocardiogram with reversible perfusion abnormality
      2. Equivocal
      3. Positive treadmill electrocardiogram with normal imaging
      4. Technically uninterpretable

II. Evaluation prior to non-cardiac surgery [One of the following]
   A. With current cardiac symptoms
      1. Prior documentation of coronary artery disease – See section III
      2. No prior documentation of coronary artery disease – See section VI
   B. Without current cardiac symptoms
      1. Intermediate or high risk non-cardiac surgery
         a. Inability to reach four mets on treadmill exercise stress testing
         b. If able to reach four mets on treadmill exercise stress testing, one of the following must be documented
            i. Creatinine 2.0 or greater
            ii. Diabetes
            iii. Congestive heart failure
            iv. Known coronary artery disease

III. Evaluation of known coronary artery disease [One of the following]
   A. Recent hospitalization for acute myocardial infarction, acute coronary syndrome, or unstable angina
      1. No cardiac catheterization, imaging stress test or cardiac CT angiogram during or since the hospitalization
      2. Recurrent chest pain or shortness of breath since discharge
      3. Percutaneous coronary intervention or coronary artery bypass surgery during the hospitalization
         a. No nuclear or echo stress test was performed since the revascularization
b. A nuclear or echo stress test was performed, but new chest pain or shortness of breath has developed since that study

B. No recent hospitalization for acute myocardial infarction, acute coronary syndrome, or unstable angina
   1. New chest pain or shortness of breath
   2. No new chest pain or shortness of breath [One of the following]
      a. Coronary artery bypass surgery or percutaneous coronary intervention was performed in the last two years and no imaging stress test has been performed after the revascularization
      b. No coronary artery bypass surgery or percutaneous coronary intervention was performed in the last two years and documentation of a prior abnormal imaging stress test, cardiac catheterization, cardiac CT angiogram, percutaneous coronary intervention or bypass surgery, carotid stenosis or stroke, peripheral artery disease, aortic aneurysm, diabetes, or coronary calcification on CT scan. [One of the following]
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   A. Evaluation of documented ventricular tachycardia
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         c. Currently taking digoxin/Lanoxin®
         d. Routine exercise stress test documents
            i. One mm or more ST-J depression with horizontal or downsloping ST segments for 80 msec after the J point
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VII. Congenital anomalies of the coronary arteries

VIII. Viability
   A. Follow up myocardial perfusion scan within 48 hours of an abnormal myocardial perfusion scan to determine if a perfusion defect noted on the initial study is scar or viable myocardium is included in 78452 by CPT code definition and a second MPI code is not appropriate
   B. Recent documented myocardial infarction to determine extent of disease or scar

IX. Post transplant cardiac disease
   A. Assessment of coronary arteriopathy

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References:

 Clinical criteria reviewed/revised: 7/15/12, 9/14/11, 4/11/11
 Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11

78459, 78491, 78492 PET Myocardial: Medicare

Clinical criteria reviewed/revised: 7/15/12, 9/14/11, 4/11/11
Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
These are obsolete examinations. The appropriate imaging is cardiac MRI.
I. Suspicion of myocardial infarct\textsuperscript{1-6}
   A. Enzymes are negative
   B. Negative EKG

References:

1. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine (L31831), Kentucky, CGS Administrators, LLC. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&PolicyType=Final&s=22&CntrctrType=1%7c9&KeyWord=78466&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78466&kq=true&bc=IAAAAAAA&A.2.

2. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine (L31831), Ohio, CGS Administrators, LLC. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&PolicyType=Final&s=42&CntrctrType=1%7c9&KeyWord=78466&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78466&kq=true&bc=IAAAAAAA&A.3.


7. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine (L29791), Massachusetts, NHIC, Corp. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&PolicyType=Final&s=24&CntrctrType=1%7c9&KeyWord=78466&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78466&kq=true&bc=IAAAAAAA&A.8.


9. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine (L29791), Vermont, NHIC, Corp. http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&PolicyType=Final&s=55&CntrctrType=1%7c9&KeyWord=78466&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78466&kq=true&bc=IAAAAAAA&A.
78466, 78468, 78469 Infarct Avid Myocardial Imaging: Medicare CT, DC, DE, KYMA, MD, ME, NH, NJ, NY, OH, PA, RI, VT

Clinical criteria reviewed/revised: 5/11/12, 8/17/11, 11/17/10
Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
A first pass or multi-gated acquisition (MUGA) scan uses a radioisotope circulating in the blood to assess ventricular function. Similar data is collected during myocardial perfusion examinations (represented by CPT codes 78478 and 78480) and can be derived from echocardiography and certain CT and MR examinations.

I. **Assessment of cardiac function for cardiotoxic chemotherapy**
   A. Prior to the initiation of cardiotoxic chemotherapy [One of the following]
      1. No echocardiogram is planned or performed
      2. Prior echocardiogram is uninterpretable due to poor visualization window
   B. Cardiac function monitoring during cardiotoxic chemotherapy. Cardiotoxic chemotherapy includes any of the following medications:
      • 5-FU (5 fluorouracil)
      • Adriamycin® (doxorubicin)
      • Avastin® (bevacizumab)
      • Cerubidine® (daunorubicin)
      • Clolar® (clofarabine)
      • Cytoxan® (cyclophosphamide)
      • Epirubicin (Pharmorubicin®)
      • Gleevec® (imatinib)
      • Herceptin® (trastuzumab)
      • Ifex® (ifosfamide)
      • Mutamycin® (mitomycin)
      • Nexavar® (sorafenib)
      • Novantrone® (mitoxantrone)
      • Sutent® (sunitinib)
      • Taxol® (paclitaxel)
      • Taxotere® (docetaxel)
      • Tykerb® (lapatinib)
      • Valstar® (valrubicin)
      • Xeloda® (capcecitabine)
      • Zavedos® (idarubicin)

II. **Assessment of cardiomyopathy**
   A. Known ejection fraction less than 50 percent on prior imaging [One of the following]
      1. Asymptomatic follow-up [Both]
         a. No cardiac function imaging in the last year
b. No planned echocardiogram

2. Symptomatic
   a. Shortness of breath

III. Assessment of congestive heart failure

A. Known ejection fraction less than 50 percent on prior imaging [One of the following]
   1. Asymptomatic follow-up [Both]
      a. No cardiac function imaging in the last year
      b. No planned echocardiogram
   2. Symptomatic [One of the following]
      a. Shortness of breath
      b. Paroxysmal nocturnal dyspnea
      c. Orthopnea

References:


Medicare LCD References:


78472, 78473, 78481, 78483, 78494, 78496 Cardiac Radionuclide Angiography

<table>
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<td>Medical Advisory Committee reviewed and approved:</td>
<td>9/19/12, 9/21/11</td>
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A first pass or multi-gated acquisition (MUGA) scan uses a radioisotope circulating in the blood to assess ventricular function. Similar data is collected during myocardial perfusion examinations and can be derived from echocardiography and certain CT and MR examinations.

I. **Assessment of cardiac function for cardiotoxic chemotherapy**
   A. Prior to the initiation of cardiotoxic chemotherapy and one of the following:
      1. No echocardiogram is planned or performed
      2. Prior echocardiogram is uninterpretable due to poor visualization window
   B. Cardiac function monitoring during cardiotoxic chemotherapy
      Cardiotoxic chemotherapy includes any of the following medications:
      - 5-FU (5 fluorouracil)
      - Adriamycin® (doxorubicin)
      - Avastin® (bevacizumab)
      - Cerubidine® (daunorubicin)
      - Clolar® (clofarabine)
      - Cytoxan® (cyclophosphamide)
      - Epirubicin (Pharmorubicin®)
      - Gleevec® (imatinib)
      - Herceptin® (trastuzumab)
      - Ifex® (ifosfamide)
      - Mutamycin® (mitomycin)
      - Nexavar® (sorafenib)
      - Novantrone® (mitoxantrone)
      - Sutent® (sunitinib)
      - Taxol® (paclitaxel)
      - Taxotere® (docetaxel)
      - Tykerb® (lapatinib)
      - Valstar® (valrubcin)
      - Xeloda® (capcecitabine)
      - Zavedos® (idarubicin)

II. **Assessment of cardiomyopathy**
   A. Known ejection fraction less than 50 percent on prior imaging
      1. Asymptomatic follow-up and both of the following:
a. No cardiac function imaging in the last year
b. No planned echocardiogram

2. Symptomatic
   a. Shortness of breath

III. Assessment of congestive heart failure
   A. Known ejection fraction less than 50 percent on prior imaging
      1. Asymptomatic follow-up and both of the following:
         a. No cardiac function imaging in the last year
         b. No planned echocardiogram
      2. Symptomatic
         a. Shortness of breath
         b. Paroxysmal nocturnal dyspnea
         c. Orthopnea

IV. Assessment of right ventricular function
   A. Cor pulmonale
   B. Acute inferior wall MI involving the right ventricle

V. Known valvular heart disease

VI. Evaluation of intracardiac shunt (first pass is preferred)
   A. No echocardiogram
   B. No equilibrium gated blood pool studies (MPI)

VII. Determination of ejection fraction prior to implantation of a defibrillator or biventricular pacemaker

References:

3. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine: Myocardial perfusion imaging and cardiac blood pool studies (L28246) Palmetto GBA, California-Northern, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=66&CntrctrType=1|9&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78472&kq=true&bc=IAAAAAAAA.
4. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine: Myocardial perfusion imaging and cardiac blood pool studies (L28246) Palmetto GBA, California-Southern, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=67&CntrctrType=1|9&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78472&kq=true&bc=IAAAAAAAA.

8. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine (L31187), Novitas Solutions, Delaware, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=11&CntrctrType=19&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.


15. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine (L31831) CGS Administrators, LLC Kentucky, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=23&CntrctrType=19&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

16. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine (L32635), Louisiana, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=24&CntrctrType=19&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

17. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine (L32791) NHI, Corp, Massachusetts, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=25&CntrctrType=19&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

18. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine (L31187) Novitas Solutions, Maryland, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=26&CntrctrType=19&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

19. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine (L31187) Novitas Solutions, Maryland, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=27&CntrctrType=19&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

20. Local Coverage Determination (LCD) for myocardial perfusion imaging and cardiac blood pool studies (L31072), Wisconsin Physicians Service Insurance Corporation, Michigan, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=28&CntrctrType=19&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

22. Local Coverage Determination (LCD) for Myocardial Perfusion Imaging and Cardiac Blood Pool Studies (L31072), Wisconsin Physicians Service Insurance Corporation, Missouri, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=29&CntrctrType=1%7c9&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

23. Local Coverage Determination (LCD) for Cardiac Radionuclide Imaging (L31700), Palmetto GBA, North Carolina, accessed at http://www.cms.gov/medicare-coverage-database/shared/pages/interim-page.aspx?sr&SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=34&CntrctrType=1%7c9&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

24. Local Coverage Determination (LCD) for Myocardial Perfusion Imaging and Cardiac Blood Pool Studies (L31072), Wisconsin Physicians Service Insurance Corporation, Nebraska, accessed at http://www.cms.gov/medicare-coverage-database/shared/pages/interim-page.aspx?sr&SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=36&CntrctrType=1%7c9&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

25. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine (L29791) NHIC, Corp, New Hampshire, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=37&CntrctrType=1%7c9&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

26. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine (L31187) Novitas Solutions, New Jersey, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=38&CntrctrType=1%7c9&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

27. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine 4C-57AB-R14 (L26583), TrailBlazer Health Enterprises LLC, New Mexico, accessed at http://www.cms.gov/medicare-coverage-database/shared/pages/interim-page.aspx?sr&SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=39&CntrctrType=1%7c9&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

28. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine: Myocardial perfusion imaging and cardiac blood pool studies (L28246) Palmetto GBA, Nevada, accessed at http://www.cms.gov/medicare-coverage-database/shared/pages/interim-page.aspx?sr&SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=40&CntrctrType=1%7c9&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

29. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine (L26659), National Government Services, New York, accessed at http://www.cms.gov/medicare-coverage-database/shared/pages/interim-page.aspx?sr&SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=41&CntrctrType=1%7c9&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

30. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine (L31831) CGS Administrators, LLC, Ohio, accessed at http://www.cms.gov/medicare-coverage-database/shared/pages/interim-page.aspx?sr&SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=42&CntrctrType=1%7c9&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

31. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine 4C-57AB-R14 (L26583), TrailBlazer Health Enterprises LLC, Oklahoma, accessed at http://www.cms.gov/medicare-coverage-database/shared/pages/interim-page.aspx?sr&SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=43&CntrctrType=1%7c9&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

32. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine (L31187) Novitas Solutions, Pennsylvania, accessed at http://www.cms.gov/medicare-coverage-database/shared/pages/interim-page.aspx?sr&SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=44&CntrctrType=1%7c9&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

33. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine (L29791) NHIC, Corp, Rhode Island, accessed at http://www.cms.gov/medicare-coverage-database/shared/pages/interim-page.aspx?sr&SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=47&CntrctrType=1%7c9&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

34. Local Coverage Determination (LCD) for Cardiac Radionuclide Imaging (L31700), Palmetto GBA, South Carolina, accessed at http://www.cms.gov/medicare-coverage-database/shared/pages/interim-page.aspx?sr&SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=48&CntrctrType=1%7c9&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

35. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine 4C-57AB-R14 (L26583), TrailBlazer Health Enterprises LLC, Texas, accessed at http://www.cms.gov/medicare-coverage-database/shared/pages/interim-page.aspx?sr&SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=51&CntrctrType=1%7c9&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

36. Local Coverage Determination (LCD) for Cardiac Radionuclide Imaging (L31700), Palmetto GBA, Virginia, accessed at http://www.cms.gov/medicare-coverage-database/shared/pages/interim-page.aspx?sr&SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=52&CntrctrType=1%7c9&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.
37. Local Coverage Determination (LCD) for Cardiovascular Nuclear Medicine (L29791) NHIC, Corp, Vermont, accessed at http://www.cms.gov/medicare-coverage-database/shared/pages/interim-page.aspx?npage=sr&SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=55&CntrctrType=1|9&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

38. Local Coverage Determination (LCD) for Myocardial Perfusion Imaging and Cardiac Blood Pool Studies (L31072), Wisconsin Physicians Service Insurance Corporation, Wisconsin, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=57&CntrctrType=1%7c9&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

39. Local Coverage Determination (LCD) for Cardiac Radionuclide Imaging (L31700), Palmetto GBA, West Virginia, accessed at http://www.cms.gov/medicare-coverage-database/shared/pages/interim-page.aspx?npage=sr&SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=58&CntrctrType=1|9&KeyWord=78472&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=78472&kq=true&bc=IAAAAAAAAAAA.

78472, 78473, 78481, 78483, 78494, 78946 Cardiac Radionuclide Angiography: Medicare

| Clinical criteria reviewed/revised: | 8/20/12, 9/14/11, 4/11/11 |
| Medical Advisory Committee reviewed and approved: | 9/19/12, 9/21/11 |
This series of studies represent the range of options for ventilation and perfusion lung scanning. Since there are codes that cover perfusion-only exams, ventilation-only exams and combined ventilation and perfusion exams, only one of these codes can be requested for a single date of service.

I. For suspected pulmonary embolism (PE), in general only ventilation-perfusion (also called VQ studies) should be used

A. Abnormal perfusion scan

References:

This series of studies represent the range of options for ventilation and perfusion lung scanning. Since there are codes that cover perfusion-only exams, ventilation-only exams and combined ventilation and perfusion exams, only one of these codes can be requested for a single date of service. Perfusion only and ventilation only lung scans are occasionally useful, but have been largely replaced by other modalities.

CTA of the chest 71275 is the preferred study.

I. For follow-up of an equivocal recent ventilation-perfusion lung scan to evaluate for interval change\textsuperscript{1-5}

II. For suspected pulmonary embolism (PE), in general only ventilation-perfusion scans (also called VQ studies), CPT 78582 should be certified.\textsuperscript{1-5} However, CT pulmonary angiogram, CTA (71275) is preferred.

A. For evaluation of suspected pulmonary embolism must have a negative chest x-ray and CTA of the chest must be contraindicated or non diagnostic.
   1. Clinical findings
      a. Sudden onset of dyspnea
      b. Pleuritic chest pain
      c. Cough
      d. Hemoptysis
      e. Tachypnea
      f. Hypoxia
      g. Known DVT by sonography or by abdominal, pelvic or extremity CT or MRI
      h. New onset of atrial fibrillation

References:

There are a series of CPT codes covering lung scanning.

In general, only ventilation-perfusion scans, also called VQ, scans should be requested.

CTA of the chest, 71275, is the preferred examination for the evaluation of pulmonary emboli.

I. Suspected pulmonary embolus (PE) (CT with contrast or CT pulmonary arteriography are also appropriate and are preferred).1-5
   A. For evaluation of suspected pulmonary embolism
      1. Clinical findings
         a. Sudden onset of dyspnea
         b. Pleuritic chest pain
         c. Cough
         d. Hemoptysis
         e. Tachypnea
         f. Hypoxia
         g. Known DVT by sonography or by abdominal, pelvic or extremity CT or MRI
         h. New onset of atrial fibrillation

References:

Quantitative Differential Pulmonary Perfusion, Including Imaging When Performed

Also known as pulmonary split crystal function study.

I. Pre-operative assessment for planned segmental, lobar or lung removal

References:

Also known as pulmonary split crystal function study.

I. Pre-operative assessment for planned segmental, lobar or lung removal\textsuperscript{1,2}

References:

78600 Brain Scintigraphy Static Limited
78601 Brain Scintigraphy Limited with Vascular Flow
78605 Brain Scintigraphy Complete Static
78606 Brain Scintigraphy Complete with Vascular Flow

These are obsolete studies and are rarely ordered.

I. 78600-78606
   A. Establish brain death

References:

SPECT scanning (with DaTSCAN [Ioflupane I-23 injection], a radiopharmaceutical indicated for striatal dopamine transporter visualization) is considered to be experimental and investigational for differentiating Parkinson's disease from other parkinsonian syndromes.

I. Dementia, memory loss¹,²

II. Frontotemporal dementia [One of the following]
   A. Progressive personality changes
   B. Change in language

III. Suspected Huntington's disease²

IV. Parkinson's disease²,³

V. Seizure disorder² (MRI is preferred.⁴)

VI. Immunocompromised patients with mass lesion detected on CT or MR for differentiation of lymphoma and infection³

References:

I. Primary brain tumor\[^1\] [One of the following]
A. Pre-operative study tumor resection with margins not defined on MRI or CT
B. Post treatment determination of viable tumor versus radiation necrosis

II. Movement disorder with a non-diagnostic MRI and genetic testing is not available\[^2,3\] [One of the following]
A. Suspected Huntington's chorea
   1. Irregular lurching gait
   2. Speech disturbance
   3. Positive family history
B. Progressive ataxia of undetermined etiology

III. Seizure\[^4\] [All of the following]
A. Seizures not responsive to adequate dosage of medications
B. Surgery is planned
C. MRI does not define a “seizure focus”

References:

I. **Dementia in order to differentiate Alzheimer’s disease from frontotemporal dementia**1,2 [All]

A. Progressive cognitive decline (suspected Alzheimer’s) with Mini Mental State score of 24 or less on two exams at least 6 months apart
B. No observed medical conditions to explain dementia
C. Thyroid-function tests normal
D. Vitamin B 12 level normal
E. No prior brain SPECT or FDG PET for the same indication for one year. If these studies are not diagnostic or uninterpretable they may be repeated after a year.
F. If there has been a change in the condition of the individual and A, B, C and D are met then FDG PET can be certified.

II. **Brain tumor**3

A. Initial staging

III. **Seizure**4 [All]

A. Seizures not responsive to adequate dosage of medications
B. Surgery is planned
C. MRI does not define a “seizure focus”

References:

1. National Coverage Determination (NCD) for PET (FDG) for Dementia and Neurodegenerative Diseases (220.6.13), accessed at [http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=National&NCS=National&NCSSelection=NCD&KeyWord=FDG+PET+for+Dementia+and+Neurodegenerative+Diseases&KeyWordLookUp=Title&KeyWordSearchType=Exact&fq=true&bc=IAAAAAA&].


This procedure is considered to be investigational and/or experimental for the above-mentioned health plan.
This is a non covered benefit under the Medicare program.¹

References:

1. NCD coding for Positron Emission Tomography (PET) Scans used for non-oncologic conditions (A47551). http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Local&ArticleType=Ed|Key|SAD|FAQ&PolicyType=Final&s=---&CntrctType=1|9&KeyWord=NCD+Coding+Article+for+Positron+Emission+Tomography+%28PET%29+Scans+Used+for+Non-Oncologic+Conditions&KeyWordLookUp=Doc&KeyWordSearchType=Exact&q=true&bc=IAAAAAAAAAAA& November 10, 2010.
I. Cerebral ischemia

II. Establish brain death

Reference:

1. Thrall JH, Zeissman HA, Nuclear Medicine, the Requisites, Mosby, 2001, 312-313.
I. Evaluation of normal pressure hydrocephalus vs. obstructive hydrocephalus\textsuperscript{1,2} [One of the following] 

A. Suspected obstructive hydrocephalus 
   1. Clinical findings [One of the following] 
      a. Headache 
      b. Papilledema 
      c. Diplopia 
      d. Mental status changes 
      e. Gait disturbance or ataxia 
      f. Seizure 
   2. History [One of the following] 
      a. AVM 
      b. Aneurysm 
      c. Intraventricular or SAH (subarachnoid hemorrhage) 
      d. Meningitis 
      e. Hydrocephalus on prior imaging 

B. Suspected normal pressure hydrocephalus with gait disturbance and one of the following 
   1. Dementia 
   2. Urinary incontinence 

II. Known hydrocephalus with worsening symptoms 

References: 

I. Cerebrospinal ventriculography [One of the following]
   A. Evaluation of internal shunt
   B. Evaluation of porencephalic cyst
   C. Evaluation of posterior fossa cyst

Clinical criteria reviewed/revised: 8/22/12, 7/27/11, 11/17/10, 12/09, 1/21/09

Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
I. **Shunt evaluation**¹
   A. Patient with ventricular-peritoneal, ventricular-pleural or ventricular venous shunt that is suspected of malfunctioning

References:

I. Shunt evaluation
   A. Patient with ventricular-peritoneal or ventricular-pleural or ventricular venous shunt that is suspected of malfunctioning
I. CSF rhinorrhea

II. CSF otorrhea

III. Post lumbar puncture headache

Clinical criteria reviewed/revised: 5/12/12, 7/27/11, 11/17/10, 12/09, 1/21/09

Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
I. Clinical suspicion of obstruction of nasolacrimal duct\(^1-3\)
   A. Excessive tearing

References:

I. Evaluation of suspected horseshoe kidney

II. Acute pyelonephritis with bacteriuria for children age 2 months to 3 years may be performed 4-6 months after the infection to detect scarring

III. Evaluation of suspected solitary or ectopic (e.g. pelvic kidney) renal tissue

References:

I. Renal transplant follow-up per protocol¹

II. Kidney salvage versus nephrectomy¹,²

III. Recurrent flank pain¹
   A. CT and US non-diagnostic, or allergy to iodinated contrast agent

IV. Evaluation of suspected horseshoe kidney¹

V. Acute pyelonephritis as a second line test to detect renal cortical scarring²-⁵

VI. Evaluation of suspected solitary or ectopic (e.g., pelvic kidney) renal tissue²,³

VII. Evaluation of acute renal failure with no evidence of obstruction on recent ultrasound⁵

VIII. Evaluation of chronic renal failure⁵
   A. Assessment of global and differential renal function to estimate prognosis for recovery

References:

78704 Kidney Image with Function Study (Imaging Renogram)

78707 is the preferred study.

I. Renal transplant follow-up per protocol

II. Kidney salvage versus nephrectomy

III. Recurrent flank pain with normal IVP
   A. CT and US non-diagnostic

IV. Evaluation of suspected horseshoe kidney

V. Acute pyelonephritis history of urinary tract infection in child 2 months to 3 years 4-6 months ago

References:

78707 Kidney Flow and Function, Single Study without Pharmacologic Intervention

I. Renovascular hypertension, suspected renal artery stenosis (MRA is preferred)\textsuperscript{1-3} [One of the following]
   A. Severe hypertension (>110 diastolic) with [One of the following]
      1. Progressive renal insufficiency
      2. Refractoriness to aggressive medical therapy
   B. Malignant or accelerated hypertension
   C. Acute worsening of previously stable hypertension
   D. Hypertension (> 100) in adult <35 years old
   E. New onset significant hypertension (>110 diastolic) after age 50
   F. Hypertension in a patient with [One of the following]
      1. Diffuse atherosclerosis or
      2. Incidentally detected asymmetry of kidney size
   G. Hypertension with an acute elevation in plasma creatinine concentration unexplained or after therapy with an ACE inhibitor
   H. Abdominal bruit
   I. Recurring acute pulmonary edema with significant hypertension
   J. Hypokalemia (<3.5 mmol/L) with normal or elevated plasma renin (>1 ng/ml/Hr) levels in the absence of diuretic therapy
   K. Children with hypertension [MRA is preferred]
   L. Hypertension and documented neurofibromatosis

II. Kidney salvage versus nephrectomy\textsuperscript{3}

III. Recurrent flank pain\textsuperscript{3,4,5}
   A. CT and US non-diagnostic, or allergy to iodinated contrast agent

IV. Suspected obstructive uropathy\textsuperscript{3,4,5} (78708 or 78709 renal scan with pharmacologic intervention is preferred.)

V. Evaluation of acute renal failure with no evidence of obstruction on recent ultrasound\textsuperscript{3,5}

VI. Evaluation of chronic renal failure\textsuperscript{3,5}
   A. Assessment of global and differential renal function to estimate prognosis for recovery

VII. Follow up of renal transplant
References:

I. Renovascular hypertension, suspected renal artery stenosis\textsuperscript{1-3} [One of the following]
   A. Severe hypertension (>110 diastolic) with [One of the following]
      1. Progressive renal insufficiency
      2. Refractoriness to aggressive medical therapy
   B. Malignant or accelerated hypertension
   C. Acute worsening of previously stable hypertension
   D. Hypertension (> 100) in adult <35 years old
   E. New onset significant hypertension (>110 diastolic) after age 50
   F. Hypertension in a patient with [One of the following]
      1. Diffuse atherosclerosis or
      2. Incidentally detected asymmetricity of kidney size
   G. Hypertension with an acute elevation in plasma creatinine concentration unexplained or after therapy with an ACE inhibitor
   H. Abdominal bruit
   I. Recurring acute pulmonary edema with significant hypertension
   J. Hypokalemia (<3.5 mmol/L) with normal or elevated plasma renin (>1 ng/ml/Hr) levels in the absence of diuretic therapy
   K. Children with hypertension (MRA is preferred)
   L. Hypertension and documented neurofibromatosis

II. Determination of renal plasma flow and/or glomerular filtration rate and differential renal function\textsuperscript{2}

III. Recurrent flank pain\textsuperscript{3}
    A. CT and US non-diagnostic, or allergy to iodinated contrast agent

IV. Suspected obstructive uropathy\textsuperscript{3,4} (Diuretic-enhanced studies included here)
    A. Prior imaging (CT or US) suggesting obstruction

V. Acute renal failure with no evidence of obstruction on recent ultrasound\textsuperscript{5}

VI. Evaluation of chronic renal failure\textsuperscript{5}
    A. Assessment of global and differential renal function to estimate prognosis

VII. Follow up of renal transplant
References:

I. Renovascular hypertension, suspected renal artery stenosis\textsuperscript{1-3} [One of the following]
   A. Severe hypertension (>110 diastolic) with [One of the following]
      1. Progressive renal insufficiency
      2. Refractoriness to aggressive medical therapy
   B. Malignant or accelerated hypertension
   C. Acute worsening of previously stable hypertension
   D. Hypertension (> 100) in adult <35 years old
   E. New onset significant hypertension (>110 diastolic) after age 50
   F. Hypertension in a patient with [One of the following]
      1. Diffuse atherosclerosis or
      2. Incidentally detected asymmetry of kidney size
   G. Hypertension with an acute elevation in plasma creatinine concentration unexplained or after therapy with an ACE inhibitor
   H. Abdominal bruit
   I. Recurring acute pulmonary edema with significant hypertension
   J. Hypokalemia (<3.5 mmol/L) with normal or elevated plasma renin (>1 ng/ml/Hr) levels in the absence of diuretic therapy
   K. Children with hypertension [MRA is preferred]
   L. Hypertension and documented neurofibromatosis

II. Determination of renal plasma flow and/or glomerular filtration rate and differential renal function\textsuperscript{3}

III. Recurrent flank pain\textsuperscript{3,5}
   A. CT and US non-diagnostic, or allergy to iodinated contrast agent

IV. Suspected obstructive uropathy\textsuperscript{3,4} (Diuretic enhanced studies included here)
   A. Prior imaging (CT, or US) suggesting obstruction

V. Acute renal failure with no evidence of obstruction on recent ultrasound\textsuperscript{5}

VI. Evaluation of chronic renal failure\textsuperscript{5}
   A. Assessment of global and differential renal function to estimate prognosis

VII. Follow up of renal transplant
References:


I. Known pyelonephritis to detect cortical scarring\textsuperscript{1,2}

References:


This study is almost exclusively performed in children.

I. Suspected vesicoureteral reflux1-5 [One of the following]
   A. Clinical evidence of recurrent urinary tract infections
   B. Known reflux
   C. Prenatal diagnosis of hydronephrosis

II. Antenatal renal pelvis measuring 5 mm (hydronephrosis) or more

III. Clinical evidence of recurrent urinary tract infections

IV. Known reflux1-4

V. Sibling with proven ureteral reflux2,3

References:

I. Testicular scan – vascular flow\textsuperscript{1-3} [Both]
   A. Suspected testicular torsion; to differentiate inflammation from ischemia in a painful testis
   B. Non-diagnostic evaluation by color Doppler ultrasound, or US not available

References:

   Accessed September 15, 2011.
I. **Octreoscan**\(^1-3\) [One of the following]
   
   A. Neuroendocrine tumors of stomach, small bowel or pancreas
   
   B. Medullary thyroid carcinoma (Patient must have an established diagnosis.)
   
   C. Carcinoid tumors [One of the following]
      1. Elevated urine 5HIAA >15mg/24hr
      2. Elevated chromogranin A (CgA) >39ng/L
      3. Elevated substance P >270 ng/L or pg/mL
      4. Elevated gastrin >100pg/mL
      5. Elevated serotonin >330mcmol/L
   
   D. Pheochromocytoma [One of the following]
      1. Elevated VMA or metanephrine >7mg/24hr
      2. Elevated blood catecholamines
         a. Epinephrine >20ng/mL
         b. Norepinephrine >60ng/mL
   
   E. Other neuroendocrine tumors – Elevated blood levels [One of the following]
      1. Gastrin (gastrinoma)
      2. Somatostatin
      3. Vasoactive intestinal polypeptide (VIP)
      4. Glucagon > 200pg/ml
      5. Insulin >2.0ng/ml
      6. Pancreatic polypeptide
      7. Multiple endocrine neoplasia type-1 (MEN-1)
      8. Multiple endocrine neoplasia type-2 (MEN-2)
      9. Merkel cell tumor of the skin
      10. Paraganglioma
      11. Adrenal medullary tumors

II. **ProstaScint**\(^4-6\) [One of the following]

   Before ProstaScint\(^\circ\) scan may be certified the patient must have the following imaging studies: chest x-ray, bone scan, and CT or MRI scan abdomen and pelvis
   
   A. New diagnosis of biopsy proven prostate carcinoma [1 and 2]
      1. Gleason score of 7 or more
      2. PSA >10
B. Patients with a history of prostate carcinoma treated with a radical prostatectomy
   1. The patient must have a rising PSA. A rising PSA means any increase in the PSA level on
      two or more consecutive tests after the first or reference test. The levels can be <10.
C. Patients with a history of prostate carcinoma treated with radiation or seed implantation, etc.,
   but without prostatectomy, must have a rising PSA.

III. Gallium scan [One of the following]
   A. Lymphoma and Hodgkin’s disease
      1. No PET scan within 2 months
   B. Sarcoid
   C. Suspected inflammatory reaction
   D. Sarcoma (PET is preferred.)
   E. Melanoma (PET is preferred.)
   F. Multiple myeloma (PET is preferred.)
   G. Head and neck tumors (PET is preferred.)

IV. Zevalin® chemotherapy

V. MIBG I (123 or 131) scan [One of the following]
   A. Neuroblastoma [One of the following]
      1. Initial staging
      2. Response to treatment with stage IV
      3. Before and after surgery of the primary tumor
      4. New onset of bone pain
      5. Planning MIBG therapy
   B. Pheochromocytoma [One of the following]
      1. Initial staging
      2. Before and after surgery of the primary tumor
      3. Suspicion of relapse (rising catecholamines or VMA)
   C. Ganglioneuroma [One of the following]
      1. Initial staging
      2. Before and after surgery of the primary tumor
      3. Suspicion of relapse
   D. Merkel cell tumor [One of the following]
      1. Initial staging
      2. Suspected relapse
   E. Medullary thyroid carcinomas
References:


78800, 78801, 78802, 78803, 78804 Radiopharmaceutical Localization of Tumor

Clinical criteria reviewed/revised: 5/8/12, 4/30/12, 9/15/11, 11/17/10, 9/16/09

Medical Advisory Committee reviewed and approved: 9/19/12, 6/27/12, 9/21/11
I. Osteomyelitis\(^1\) (MRI is preferred; three-phase bone scan, 78315, may be used if MRI is contraindicated. For chronic osteomyelitis In-labeled WBC scan, 78805-78807, with a marrow scan may be preferred.) [One of the following]  
   A. Clinical and laboratory findings [One of the following]  
      1. Aural temperature > 38.3°C or 100.9°F  
      2. Leukocytosis, WBC >11,500/cu.mm  
      3. Blood culture positive  
      4. X-ray suggestive of osteomyelitis  
      5. ESR > 22mm/hr  
      6. C-reactive protein > 10 mg/L  
   B. History of diabetes, dialysis or peripheral vascular disease  
   C. History of penetrating injury or surgery near the involved bone  
   D. Sinus tract, poor wound or fracture healing  
   E. Preoperative evaluation of known osteomyelitis  
   F. Positive probe to bone test  
   G. Post treatment evaluation  
   H. Infection of a prosthesis or other orthopedic hardware  

General statement:  
In the presence of orthopedic hardware or prosthesis, normal bone marrow is disrupted and displaced, making interpretations difficult in these regions. Comparison of \(^{111}\)In-leukocyte localization with \(^{99m}\)Tc-sulfur colloid uptake using combined of sequential \(^{111}\)In-leukocyte/\(^{99m}\)Tc-colloid images is often necessary. Comparison with adjacent or contralateral regions can also be helpful.  

A white-cell scan should be accompanied by a bone marrow scan using Tc 99m sulfur colloid performed either together or sequentially. \(^{111}\)In-leukocyte uptake is typically increased in the vicinity of infected orthopedic hardware and normal or loose but non-infected prosthesis. Infection is likely when there is abnormal \(^{111}\)In-leukocyte localization without corresponding \(^{99m}\)Tc-sulfur colloid bone marrow activity (discordant activity).  

II. Cellulitis [All]  
   A. Local pain  
   B. Erythema  
   C. Swelling  
   D. Heat
III. Peritonitis

IV. Inflammatory granulomatous process
   A. Tuberculosis
   B. Sarcoidosis

V. Pulmonary infection and inflammatory disease

VI. Pneumonia
   A. Lung abscess
   B. Tuberculosis
   C. Sarcoidosis
   D. Pneumocystis carinii
   E. Adult respiratory distress syndrome (ARDS)
   F. Cytomegalovirus (CMV)
   G. Lymphadenitis
   H. Actinomycetes
   I. Nocardia
   J. Aspergillus
   K. Cryptococcosis

VII. Drug-induced pulmonary reactions or toxicity
   A. Cytoxan®
   B. Busulfan
   C. Bleomycin
   D. Amiodarone
   E. Nitrofurantoin

VIII. Urinary tract infections
   A. Pyelonephritis
   B. Diffuse interstitial nephritis

IX. Fever of unknown origin (FUO)

References:

The main indications for the use of whole body PET or PET/CT are melanoma, myeloma and primary bone or soft tissue sarcomas below the knee. If either 78813 or 78816 are requested for other indications the physician should be redirected to 78812 or 78815.

**General Statements**

1. PET or PET/CT cannot be certified for a diagnosis of prostate cancer.
2. PET or PET/CT cannot be certified for the initial diagnosis of male or female breast cancer.
3. PET or PET/CT cannot be certified for evaluation of axillary nodes in beneficiaries with a diagnosis of breast cancer.
4. PET or PET/CT cannot be certified for the evaluation of regional lymph nodes in beneficiaries with a diagnosis of melanoma.
5. PET or PET/CT may be certified one time only for beneficiaries with a very strong suspicion of a solid tumor based on standard imaging (must have results of these tests).
6. PET or PET/CT may be certified for initial and subsequent evaluation of members with documented diagnosis of myeloma.
7. PET and PET/CT may not be certified for beneficiaries who have an established diagnosis of a solid tumor but who are asymptomatic with no signs or symptoms of disease and are not currently in treatment.
8. PET and PET/CT may be approved in a beneficiary with known diagnosis of malignancy to determine the optimal anatomic site for biopsy or other invasive diagnostic procedure.

I. **Breast carcinoma**[^1-10] [One of the following]

A. Initial staging of inflammatory breast cancer
B. Initial staging of invasive breast cancer stage IIIA or higher when conventional imaging is equivocal
C. Restaging of women with known metastasis prior to new therapy
D. Evaluating response to treatment with locally advanced and metastatic disease when a change in therapy is contemplated
E. Restaging with evidence of progression of disease
F. Suspected recurrence [One of the following]
   1. New palpable lesion in axilla or adjacent area
   2. Rising tumor markers
   3. Changes on other imaging which are equivocal or suspicious

[^1-10]: Please refer to the relevant medical guidelines or publications for detailed information on the specific indications and requirements.
G. **PET is not to be used to:** [One of the following]
   1. Establish the initial diagnosis of breast cancer or to detect the primary lesion
   2. Clarify a finding on mammography, physical examination, MRI or ultrasound
   3. Evaluate axillary nodes
   4. Not indicated for surveillance imaging in asymptomatic women with no signs or symptoms or laboratory findings suggestive of recurrent disease

II. **Thyroid carcinoma**[^11-14] [One of the following]
   A. Must have tissue diagnosis of thyroid cancer of follicular cell origin (follicular, papillary, and Hurthle cell) and have been treated by thyroidectomy and radiiodine ablation
      1. Indicated for staging and restaging in patients with [Both a and (either b or c) are required]
         a. Negative $^{131}$I and/or thallium $^{201}$ scans (whole body)
         b. Thyroglobulin level >10 ng/ml
         c. Thyroglobulin >2 ng/mLr after thyrogen stimulation
   B. Surveillance imaging in a stable asymptomatic individual with no change in signs, symptoms or laboratory results such as thyroglobulin level is not indicated
   C. Suspected recurrence
      1. Negative $^{131}$I or Th $^{201}$ scan
      2. Stimulated thyroglobulin > 2 ng/mL
   D. Initial staging of anaplastic thyroid cancer

III. **Head and neck cancers excluding thyroid cancer**[^15-18] [One of the following]
   A. Evaluation of patient with metastatic cervical lymph node(s) to establish primary site
   B. Staging of patient with known primary head and neck cancer [One of the following]
      1. Oral cavity
      2. Oropharynx
      3. Hypopharynx
      4. Nasopharynx for clinical stage III-IV
      5. Glottis for stage III-IV
      6. Larynx for stage III-IV
      7. Supraglottis for stage III-IV
      8. Occult primary
      9. Mucosal melanoma
   C. Restaging after completion of treatment [One of the following]
      1. Radiation therapy – no sooner than 12 weeks after completion of treatment (If done too soon may give false positive result.)
      2. Surgery – no sooner than 6 weeks after surgery
      3. Chemotherapy – no sooner than 1-2 weeks after completion
      4. Evaluation for possible recurrence based on physical examination or conventional imaging
   D. Symptomatic member with new signs or symptoms of disease
   E. Not indicated for surveillance of an asymptomatic individual who is currently not in treatment and has no signs, symptoms or laboratory tests suggesting recurrence of disease
   F. Needle biopsy with squamous cell carcinoma, adenocarcinoma or anaplastic epithelial cancer with no known primary, PET should be performed prior to surgical biopsy if the primary is not found on other imaging (CT, MRI, US)
IV. Non-small cell lung cancer (NSCLC) including evaluation of solitary pulmonary nodule\textsuperscript{19-29} [One of the following]
A. Initial staging of non-small cell lung cancer that is pathologically confirmed
B. Restaging after completion of treatment – surgery, chemotherapy, radiation therapy
   1. No sooner than 12 weeks after completion of radiation therapy unless there is a change in clinical or imaging findings suggestive of recurrence or progression
C. Restaging if there is clinical evidence of disease progression on treatment (standard imaging and/or tumor markers)
D. Not indicated for surveillance of an asymptomatic individual who is currently not in treatment and has no signs, symptoms or laboratory tests suggesting recurrence of disease
E. Symptomatic with new signs or symptoms of recurrence or metastatic disease
F. New findings on standard imaging (chest x-ray, CT, or MRI of chest, abdomen or pelvis) suggestive of recurrence or metastatic disease
G. Characterization of solitary pulmonary nodule greater than or equal to 8mm

V. Small-cell lung cancer\textsuperscript{30-31}
A. Disease is unilateral and can be safely treated with radiation (limited stage)
   1. Initial staging
B. PET/CT is not recommended for routine follow up.

VI. Colorectal carcinoma (including anal carcinoma)\textsuperscript{1,2,32-40} – The routine use of PET or PET/CT is not recommended for the diagnosis and staging of clinical stage I-III colorectal cancer. It is recommended for staging and prognosis if conventional imaging (CT, MRI) is equivocal for metastases. It should be used to evaluate individuals in whom there is metastatic disease and surgical resection for cure is planned. [One of the following]
A. Initial staging (after tissue diagnosis is established) except if there is evidence of metastatic disease on standard imaging
B. Proven or suspected metastatic disease (any T and N, M1) [One of the following]
   1. Initial staging if potentially surgically (or using ablative techniques) curable M1 disease
   2. Evaluation of radiofrequency ablation (or similar procedure) of metastases [One of the following]
      a. After procedure to evaluate effect and confirm adequate margins
      b. May be repeated after each procedure
   3. PET or PET/CT should not be used to monitor response to chemotherapy. Contrast-enhanced CT or MRI should be used for this purpose.
   4. Rising CEA (>2.5 in nonsmoker and >5.0 in a smoker) if CT or MRI fails to identify the site
   5. Not indicated for surveillance of an asymptomatic individual who is currently not in treatment and has no signs, symptoms or laboratory tests suggesting recurrence of disease

VII. Lymphoma/Hodgkin’s disease and non-Hodgkin’s lymphoma\textsuperscript{1,2,41-52} [One of the following]
A. Initial staging (usually after tissue diagnosis is established) in addition to standard imaging
B. Restaging after completion of therapy – Hodgkin’s disease [One of the following]
1. Chemotherapy and radiation
2. Chemotherapy alone [One of the following]
   a. If PET is positive after completion of chemotherapy, may monitor with PET/CT.
   b. If PET/CT is negative after completion of chemotherapy, no further PET/CT if asymptomatic.
C. Bulky or unfavorable disease – Hodgkin's disease [One of the following]
   1. Repeat the PET/CT after 4 cycles of chemotherapy.
   2. If partial response after 4 cycles, repeat PET/CT after additional 2 cycles of chemotherapy.
   3. If partial response after radiation therapy is complete, repeat the PET/CT.
   4. If there still is a partial response after radiation therapy and the individual is to be observed or there is a negative biopsy, may follow with PET/CT.
D. Stage III-IV Hodgkin's disease [One of the following]
   1. Completion of Stanford V chemotherapy over 12 weeks
   2. Completion of Stanford V chemotherapy and 3 months following completion of radiation therapy restage with either CT or PET/CT if the prior PET/CT was positive
   3. Completion of 4 cycles of BEACOPP repeat PET/CT
      a. Partial response repeat after additional 4 cycles or negative biopsy
E. Diffuse large B-cell lymphoma wait at least 8 weeks after radiation therapy is completed before restaging
F. Monitor response to therapy if a change in treatment is anticipated
G. New symptoms or findings: [One of the following]
   1. Night sweats
   2. Weight loss
   3. ESR >30 mm/hr
   4. Aural temperature > 38.3° C or 100.9° F (unknown etiology) >one week
   5. Suspected metastasis by CXR, MRI, CT
H. PET is not indicated for surveillance imaging during remission in an asymptomatic beneficiary with no signs or symptoms of disease.
I. PET or PET/CT should not be used for the evaluation of CLL or SLL except if Richter’s transformation is of concern and there is a need to determine optimal site for biopsy.

VIII. Esophageal carcinoma\textsuperscript{1,2,53-60} [One of the following]
A. Initial staging of known esophageal cancer (must have tissue diagnosis) with standard imaging showing no evidence of M1 disease
B. Following preoperative chemoradiation and prior to surgery (A CT scan of the chest is not required if PET/CT is performed at this time.)
C. Restaging of patients after surgery
D. Reevaluation for suspected recurrence in a symptomatic individual with new signs or symptoms of disease [One of the following]
   1. Changed findings on endoscopy or imaging
   2. Inability to perform endoscopy
   3. Lymphadenopathy
E. PET is not indicated for surveillance imaging during remission in an asymptomatic beneficiary with no signs or symptoms of disease
IX. Cervical carcinoma\textsuperscript{1,61,62} (Must have a positive tissue diagnosis) [One of the following]
A. Initial staging with documented tissue diagnosis
B. Restaging after completion of therapy
C. Evaluate for recurrence in an individual with new signs and symptoms
D. PET is not indicated for surveillance imaging during remission in an asymptomatic beneficiary with no signs or symptoms of disease.

X. Ovarian carcinoma\textsuperscript{1,63-68} [One of the following]
A. Monitor and follow up after surgery with or without chemotherapy
B. Evaluation of recurrence [One of the following]
   1. Elevated tumor markers
      a. CA 125 > 35U/mL
   2. Change in physical examination or clinical condition
C. PET is not indicated for surveillance imaging during remission in an asymptomatic beneficiary with no signs or symptoms of disease.

XI. Testicular carcinoma (seminoma)\textsuperscript{1,29,69-71} [One of the following]
A. Pure seminoma after primary treatment [One of the following]
   1. Residual mass on CT with normal tumor markers (Wait 6 weeks after completion of chemotherapy.)
   2. Rising tumor markers [One of the following]
      a. Beta HCG
      b. Alpha fetoprotein
   3. No residual mass
      a. Persistently elevated beta HCG which may not be rising
B. PET is not indicated for surveillance imaging during remission in an asymptomatic beneficiary with no signs or symptoms of disease.

XII. Soft tissue sarcoma\textsuperscript{1,72,73} [Both A and (B, C or D) are required]
A. Must have an established tissue diagnosis
B. Extremity/trunk initial staging for lesions > 3cm which are firm and deep [One of the following]
   1. Initial staging
   2. Monitoring response to treatment if change in therapy is anticipated
   3. Suspected recurrence in a symptomatic member with new signs or symptoms
C. Retroperitoneal/intra-abdominal
   1. GIST
      a. Clarification of ambiguous findings on CT (Must submit a copy of the CT report)
D. PET is not indicated for surveillance imaging during remission in an asymptomatic beneficiary with no signs or symptoms of disease.

XIII. Melanoma (78813 or 78816 are preferred.)\textsuperscript{74-77} [One of the following]
A. Must have tissue diagnosis
B. Initial staging with \textbf{clinical stage IIB-IIC, N0}
C. < 1mm thick with ulceration or mitotic rate > 1 per mm\textsuperscript{2} or > 1 mm thick any characteristic
D. Initial staging of \textbf{clinical stage III with positive sentinel node or clinically positive node(s)}
E. Initial staging of clinical stage III in-transit
F. Initial staging clinical stage IV
G. NOT PERMITTED FOR EVALUATION OF REGIONAL NODES
H. Follow up stage IIB-IV with no evidence of disease
   1. Every 6-12 months for 5 years
   2. Monitoring response to therapy when a change is anticipated
   3. Not for surveillance in asymptomatic individual with stage 0-IIA disease
   4. Stage IIB-IV every 6-12 months for 5 years and if negative at 5 years no further imaging

XIV. Myeloma (78813 or 78816 are preferred.)78-80 [One of the following]
   A. Initial staging with an established diagnosis
   B. Restaging after completion of initial therapy
   C. Suspected recurrence in symptomatic individual with new signs and symptoms of disease
   D. Following autologous stem cell transplant

XV. Thymoma (Must have a mediastinal mass)81 [One of the following]
   A. Initial staging
   B. Not allowed for surveillance (CT is the preferred follow-up examination.)

XVI. Ewing’s sarcoma and osteogenic sarcoma82 (Must have a histologic diagnosis of either Ewing’s sarcoma or osteogenic sarcoma) [One of the following]
   A. Initial staging
   B. Restaging after completion of chemotherapy for 12-24 weeks prior to local therapy for Ewing’s and chemotherapy for osteogenic sarcoma
   C. Restaging after completion of local therapy for Ewing’s and osteogenic sarcoma
   D. Surveillance [One of the following]
      1. Every 3 months for 2 years
      2. Every 4 months for the 3rd year
      3. Every 6 months for years 4 and 5
      4. Annually after year 5

XVII. Gastric carcinoma83-85 (Must have a histologic diagnosis of gastric cancer) [One of the following]
   A. Initial staging prior to surgery if prior imaging shows no evidence of M1 disease
   B. Restaging after completion of treatment if unresectable after completion of primary chemotherapy prior to surgery or medical unfit individuals following primary treatment
   C. Not for routine surveillance imaging in an asymptomatic individual with no clinical or laboratory evidence of disease

XVIII. Initial staging of an occult cancer1 [(Both A and B) or (C alone) is required]
   A. Must have either [One of the following]
      1. An established diagnosis of malignancy of unknown primary site or
      2. Indeterminate histology on biopsy
   B. Primary site cannot be determined by: [One of the following]
      1. Endoscopy
      2. Prior CT
3. Prior MRI
   C. May not be used for restaging carcinoma of unknown primary

References:

8. 18F-fluorodeoxyglucose (FDG) PET and PET/CT practice guidelines in oncology, Society of Nuclear Medicine, accessed at http://www.snm.org/docs/PET_PROS/OncologyPracticeGuidelineSummary.pdf, August 1, 2011.
16. 18F-fluorodeoxyglucose (FDG) PET and PET/CT practice guidelines in oncology, Society of Nuclear Medicine, accessed at http://www.snm.org/docs/PET_PROS/OncologyPracticeGuidelineSummary.pdf, August 1, 2011.


<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>78811</td>
<td>PET Limited Area</td>
</tr>
<tr>
<td>78812</td>
<td>PET Skull Base to Mid-thigh</td>
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<tr>
<td>78813</td>
<td>PET Whole Body</td>
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<tr>
<td>78814</td>
<td>PET/CT Limited Area</td>
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<tr>
<td>78815</td>
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</table>

Medicare

The National Oncology PET Registry or NOPR was established by the American College of Radiology Imaging Network, the American College of Radiology and the Academy of Molecular Imaging and has been working collaboratively with CMS to provide PET or PET/CT scans to Medicare beneficiaries under the CMS program for coverage with evidence in development or CED. Information regarding the NOPR is available at [http://www.cancerpetregistry.org/](http://www.cancerpetregistry.org/). This program requires that the referring physician and the PET provider submit data to a clinical registry (NOPR) in order to collect information regarding the impact of the PET or PET/CT scans on clinical management when the clinical history does not meet CMS' standard clinical indications for PET scans. The standard indications and those which fall under CED can be found at the CMS website or at the NOPR website.

Rendering facilities must participate in the program in order to be reimbursed. Details of how to apply for participation are available at the NOPR website.

PET or PET/CT requests that meet the CMS standard indications should be billed to the managed care health plan and will be certified. Requests that do not meet the standard indications will be denied.

PET scans performed on NOPR registered beneficiaries that meet criteria for CED but not the standard criteria should be billed directly to CMS and not to the managed care health plan. These scans do not require precertification and if precertification is requested it will be denied by the managed care health plan. However, if the beneficiary is registered with the NOPR and the rendering facility participates in the program the study may be performed and should be billed to CMS and not the managed Medicare health plan. Beneficiaries, requesting providers and rendering sites should refer to the NOPR website for further clarification.

**General Statements**

1. **PET or PET/CT cannot be certified for initial staging of prostate cancer or leukemia.** However, for prostate cancer PET may be certified for restaging or response to therapy if the beneficiary is registered with the NOPR. These scans will be denied by the managed Medicare plan and should be billed directly to CMS.
2. **PET or PET/CT cannot be certified for the initial diagnosis of male or female breast cancer.**
3. PET or PET/CT cannot be certified for evaluation of axillary nodes in beneficiaries with a diagnosis of breast cancer.
4. PET or PET/CT cannot be certified for the evaluation of regional lymph nodes in beneficiaries with a diagnosis of melanoma.
5. PET or PET/CT may be certified for beneficiaries with a very strong suspicion of a solid tumor based on other diagnostic testing.
6. PET and PET/CT may be certified for subsequent treatment for beneficiaries who have documented diagnosis of tumors of the breast, esophagus, colon or rectum, head and neck (non thyroid) cancer, lymphoma, melanoma, non small cell lung cancer and thyroid cancer as indicated below.
7. PET and PET/CT may be certified for subsequent treatment in women with known diagnosis of ovarian cancer.
8. PET or PET/CT may be certified for initial and subsequent evaluation of members with documented diagnosis of myeloma.
9. PET and PET/CT may not be certified for beneficiaries who have an established diagnosis of a solid tumor but who are asymptomatic and not currently in treatment. However, if the beneficiary is asymptomatic but still actively managed for a solid tumor PET or PET/CT can be obtained through the NOPR as Coverage with study participation.
10. PET and PET/CT may be approved in a beneficiary with known diagnosis of malignancy to determine the optimal anatomic site for biopsy or other invasive diagnostic procedure.

I. Breast carcinoma with a tissue diagnosis of breast cancer
   A. Initial staging with locally advanced or metastatic disease when conventional imaging is equivocal or suspicious
   B. Restaging
   C. Evaluating response to treatment with locally advanced and metastatic disease when a change in therapy is contemplated
   D. Suspected recurrence
   E. PET is not to be used to:
      1. Establish the diagnosis of breast cancer or to detect the primary lesion
      2. Clarify a finding on mammography, physical examination, MRI or ultrasound
      3. Evaluate axillary nodes
      4. Not indicated for surveillance when not in active treatment

II. Thyroid carcinoma
   A. Initial staging
   B. Subsequent treatment strategy [Both of the following]
      1. Negative $^{[131]}$ whole body scan
      2. Thyroglobulin > 10ng/ml
   C. Not indicated for surveillance of an asymptomatic individual who is currently not in treatment and has no signs, symptoms or laboratory tests suggesting recurrence of disease
   D. Restaging for all other thyroid indications is eligible under NOPR

III. Head and neck cancers excluding thyroid cancer
   A. Evaluation of patient with metastatic cervical lymph node(s) to establish primary site
   B. Initial staging of patient with pathologically documented primary head and neck cancer
C. Restaging after completion of treatment
D. Monitor response to therapy if a change in therapy is anticipated
E. Symptomatic member with new signs or symptoms of disease
F. Not indicated for surveillance of an asymptomatic individual who is currently not in treatment and has no signs, symptoms or laboratory tests suggesting recurrence of disease

IV. **Non-small cell lung cancer (NSCLC)**
   A. Initial staging of non-small cell lung cancer that is pathologically confirmed
   B. Restaging after completion of treatment—surgery, chemotherapy, radiation therapy
   C. Monitoring response to therapy only when a change in therapy is anticipated
      1. Solitary pulmonary nodule

V. **Small-cell lung cancer**
   A. Initial staging of small-cell lung cancer that is pathologically confirmed

VI. **Colorectal carcinoma (not anal carcinoma – see below)**
   A. Initial staging (after tissue diagnosis is established)
   B. Restaging after completion of therapy
   C. Monitoring response to therapy only when a change in therapy is anticipated
   D. Not indicated for surveillance of an asymptomatic individual who is currently not in treatment and has no signs, symptoms or laboratory tests suggesting recurrence of disease

VII. **Lymphoma/Hodgkin's disease and non-Hodgkin's lymphoma**
   A. Initial staging (usually after tissue diagnosis is established)
   B. Restaging after completion of therapy
   C. Monitor response to therapy if a change in treatment is anticipated
   D. PET is not indicated for surveillance imaging during remission in an asymptomatic beneficiary with no signs or symptoms of disease

VIII. **Esophageal carcinoma**
   A. Initial staging of known esophageal cancer (must have tissue diagnosis)
   B. Restaging of patients after treatment
   C. Reevaluation for suspected recurrence
   D. Monitoring response to treatment if a change in therapy is anticipated
   E. PET is not indicated for surveillance imaging during remission in an asymptomatic beneficiary

IX. **Cervical carcinoma**
   A. Initial staging for women with biopsy proven cervical cancer
   B. Restaging after completion of treatment
   C. PET is not indicated for surveillance imaging during remission in an asymptomatic beneficiary with no signs or symptoms of disease.

X. **Ovarian carcinoma**
   A. Initial staging with a tissue diagnosis
   B. Restaging after completion of treatment
   C. Evaluation of recurrence in a symptomatic member with signs and/or symptoms of disease
D. Monitoring response to treatment if a change in therapy is anticipated
E. PET is not indicated for surveillance imaging during remission in an asymptomatic beneficiary with no signs or symptoms of disease.

XI. Pancreatic carcinoma with a tissue diagnosis
   A. Initial staging

XII. Testicular carcinoma (seminoma or non-seminomatous germ cell tumor) with tissue diagnosis
   A. Initial staging

XIII. Soft tissue sarcoma with tissue diagnosis
   A. Initial staging

XIV. Melanoma with tissue diagnosis
   A. Initial staging other than regional lymph nodes
   B. In known disease, detection of distal metastases
   C. NOT PERMITTED FOR EVALUATION OF REGIONAL NODES
   D. Monitoring response to therapy when a change is anticipated
   E. Restaging after completion of therapy
   F. Symptomatic individual with new signs or symptoms of disease
   G. PET is not indicated for surveillance imaging during remission in an asymptomatic beneficiary with no signs or symptoms of disease.

XV. Myeloma with established tissue diagnosis
   A. Initial staging
   B. Restaging after completion of initial therapy
   C. Suspected recurrence in symptomatic individual with new signs and symptoms of disease
   D. PET is not indicated for surveillance imaging during remission in an asymptomatic beneficiary with no signs or symptoms of disease.

XVI. Solitary pulmonary nodule by CT
   A. Performed for changes or equivocal findings on CT. Multiple nodules are covered if one is significantly larger than the others or is new since a prior chest x-ray or CT. Such a lesion should be treated as a solitary nodule.

XVII. Anal cancer
   A. Initial staging

XVIII. Gastric (stomach) cancer
   A. Initial staging

XIX. Small intestine (small bowel)
   A. Initial staging

XX. Liver and intrahepatic bile duct cancer
A. Initial staging

XXI. Gallbladder and extrahepatic bile duct cancer
   A. Initial staging

XXII. Retroperitoneal and/or peritoneal cancer
   A. Initial staging

XXIII. Pleura
   A. Initial staging

XXIV. Thymus, heart and mediastinum
   A. Initial staging

XXV. Bone and cartilage
   A. Initial staging

XXVI. Non-melanoma skin cancer
   A. Initial staging

XXVII. Kaposi’s sarcoma
   A. Initial staging

XXVIII. Uterine
   A. Initial staging

XXIX. Adnexal, vaginal, vulvar cancers
   A. Initial staging

XXX. Bladder
   A. Initial staging

XXXI. Kidney and ureters
   A. Initial staging

XXXII. Metastatic cancer with unknown primary
   A. Initial staging

XXXIII. Neuroendocrine
   A. Initial staging

XXXIV. All other solid tumors
   A. Initial staging
The following chart as well as footnotes and important notes are taken directly from [http://www.cancerpetregistry.org/pdf/FDG%20Indications.pdf](http://www.cancerpetregistry.org/pdf/FDG%20Indications.pdf), which was accessed April 28, 2011. It is included for information and reference purposes. It may change from time to time.

### Cancer and Indications Eligible for Entry into NOPR

Cancers and indications that are reimbursable by Medicare are NOT eligible for entry in the NOPR. Cancers and indications that are specifically excluded for Medicare reimbursement are also not eligible for entry in the NOPR.

<table>
<thead>
<tr>
<th>Indications</th>
<th>Initial Treatment Strategy (formerly Diagnosis and Initial Staging)</th>
<th>Subsequent Treatment Strategy (includes Treatment Monitoring, Restaging and Detection of Suspected Recurrence)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lip, oral cavity, and pharynx (140-149)</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Esophagus (150)</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Stomach (151)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Small intestine (152)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Colon (153) and rectum (154)</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Anus (154) (considered distinct from rectum – see footnote 1)</td>
<td>C</td>
<td>NOPR1</td>
</tr>
<tr>
<td>Liver and intrahepatic bile ducts (155)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Gallbladder and extrahepatic bile ducts (156)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Pancreas (157)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Retroperitoneum and peritoneum (158)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Nasal cavity, ear, and sinuses (160)</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Larynx (161)</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Lung, non-small cell (162)</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Lung, small-cell (162)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Pleura (163)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Thymus, heart, mediastinum (164)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Bone/cartilage (170)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Connective/other soft tissue (171)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>Coverage</td>
<td>Code</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>----------</td>
<td>------</td>
</tr>
<tr>
<td>Melanoma of skin (172) (nasopharyngeal, ocular and vulvar/vaginal melanomas are coded based on those anatomic locations; PET not covered for regional nodal staging – see footnote 2)</td>
<td>C / NC2</td>
<td>C</td>
</tr>
<tr>
<td>Non-melanoma of skin (173)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Female breast (174) (PET not covered for diagnosis of breast masses or for axillary nodal staging – see footnotes 2 and 3)</td>
<td>C / NC 2,3</td>
<td>C</td>
</tr>
<tr>
<td>Male breast (175) (PET not covered for diagnosis of breast masses or for axillary nodal staging – see footnotes 2 and 3)</td>
<td>C / NC 2,3</td>
<td>C</td>
</tr>
<tr>
<td>Kaposi's sarcoma (176)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Uterus, unspecified (179)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Cervix (180) (PET not covered for diagnosis of cervical cancer – see footnote 4)</td>
<td>C / NC 4</td>
<td>C</td>
</tr>
<tr>
<td>Placenta (181)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Uterus, body (182)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Ovary (183)</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Uterine adnexa (183.2-183.9)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Other and unspecified female genitalia (184) (includes vulvar/vaginal melanoma)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Prostate (185)</td>
<td>NC</td>
<td>NOPR</td>
</tr>
<tr>
<td>Testis (186)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Penis and other male genitalia (187)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Bladder (188)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Kidney and other urinary tract (189)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Eye (190)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Primary brain (191)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Other and unspecified nervous system (192)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Thyroid (193) (covered for subsequent treatment strategy only if specific requirements met; otherwise NOPR)</td>
<td>C</td>
<td>C / NOPR</td>
</tr>
<tr>
<td>Other endocrine glands and related structures(194)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>Metastatic cancer / unknown primary origin (196-199)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>---</td>
<td>------</td>
</tr>
<tr>
<td>Lymphoma (200-202)</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Myeloma (203)</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Leukemia (204-208)</td>
<td>NOPR</td>
<td>NOPR</td>
</tr>
<tr>
<td>Neuroendocrine tumor (209)</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>All other solid tumors</td>
<td>C</td>
<td>NOPR</td>
</tr>
<tr>
<td>All other cancers not listed herein</td>
<td>NOPR</td>
<td>NOPR</td>
</tr>
</tbody>
</table>

**FOOTNOTES:**
1. Some Medicare contractors include anal cancer in their local coverage of “colorectal cancer”; for PET facilities served by those carriers, PET for subsequent treatment evaluation of anal cancer would be a covered indication.
2. PET is non-covered for initial staging for axillary lymph nodes in patients with breast cancer and of regional lymph nodes in patients with melanoma, but is covered for detection of distant metastatic disease in high-risk patients with breast cancer or melanoma.
3. PET is non-covered for “diagnosis” of breast cancer to evaluate a suspicious breast mass. However, PET is covered for initial treatment strategy evaluation of a patient with axillary nodal metastasis of unknown primary origin or in a patient with a paraneoplastic syndrome potentially caused by an occult breast cancer.
4. PET is non-covered for “diagnosis” of cervical cancer. However, PET is covered for initial staging of cervical cancer.

**IMPORTANT NOTES:**
The scientific evidence concerning the clinical utility of FDG-PET is generally less robust for cancers and indications that are currently covered by Medicare only in the NOPR than for cancers and indications that are currently covered without the requirement for clinical data submission to the NOPR. For this reason, Medicare has conditioned coverage of FDG-PET under the NOPR on the collection of clinical data. These data will be used to help determine the clinical utility of FDG-PET for conditionally covered cancers and indications. The billing physician remains responsible for documenting medical necessity, which is required for the coding and billing of both covered and NOPR-eligible PET studies. Eligibility for the NOPR does not constitute a clinical management recommendation for the use of PET for the conditionally covered cancers and indications, by either the Medicare program or NOPR investigators. Referring and interpreting physicians are thus advised to refer to the published literature to better understand the potential limitations of FDG-PET for NOPR-eligible uses.

The ICD-9-CM® codes in the table above are provided for reference purposes only and for guidance in completion of the cancer type on the pre-PET form for cases included in the NOPR. Each provider should refer to the coverage policy of its respective Medicare contractor to determine which ICD-9-CM® codes are indicative of medical necessity. Note also that, although PET is covered to aid in the diagnosis of strongly suspected cancers, claims submitted with the appropriate non-cancer ICD-9-CM® code(s) may not be paid without medical necessity appeal.

PET imaging of the brain with CPT code 78608 is covered for those cancers and indications designated by “C” in the table above and is covered only under NOPR for those cancers and indications indicated by “NOPR.”
References:


3. Decision Memo for Positron Emission Tomography (FDG) for Breast Cancer (CAG-00094N), Centers for Medicare and Medicaid Services, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?NCAId=71&NcaName=Positron+Emission+Tomography+(FDG)+for+Breast+Cancer&NCId=331&ncdver=3&SearchType=Advanced&CoverageSelection=National&NCSelection=NCA%7cCAL%7cNCD%7cMEDCAC%7cTA%7cMCD&KeyWord=Positron+emission+tomography&KeyWordLookUp=Title&KeyWordSearchType=Exact&kq=true&lsPopup=y&bc=AAAAAAIAAAAA.

4. Decision Memo for Positron Emission Tomography (FDG) for Thyroid Cancer (CAG-00095N), Centers for Medicare and Medicaid Services, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?NCAId=70&NcaName=Positron+Emission+Tomography+(FDG)+for+Thyroid+Cancer&SearchType=Advanced&CoverageSelection=National&NCSelection=NCA%7cCAL%7cNCD%7cMEDCAC%7cTA%7cMCD&KeyWord=Positron+emission+tomography&KeyWordLookUp=Title&KeyWordSearchType=Exact&kq=true&bc=IAAAAAABAIAA.


6. National Coverage Determination (NCD) for FDG PET for Melanoma (220.6.6), Centers for Medicare and Medicaid Services, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=National&NCSelection=NCD&KeyWord=FDG+PET+for+MELANOMA&KeyWordLookUp=Title&KeyWordSearchType=Exact&kq=true&bc=IAAAAAABAIAA.

7. National Coverage Determination (NCD) for FDG PET for Lymphoma (220.6.5), Centers for Medicare and Medicaid Services, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=National&NCSelection=NCD&KeyWord=FDG+PET+for+LYMPHOMA&KeyWordLookUp=Title&KeyWordSearchType=Exact&kq=true&bc=IAAAAAABAIAA.


9. National Coverage Determination (NCD) for FDG PET for Brain, Cervical, Ovarian, Pancreatic, Small Cell Lung and Testicular Cancers (220.6.14), Centers for Medicare and Medicaid Services, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=National&NCSelection=NCD&KeyWord=FDG+PET+for+BRAIN%2c+CERVICAL%2c+OVARIAN%2c+PANCREATIC%2c+SMALL+CELL+LUNG%2c+and+TESTICULAR+CANCERS&KeyWordLookUp=Title&KeyWordSearchType=Exact&kq=true&bc=IAAAAAABAIAA.
This CPT code is redirected to CPT codes 78811 through 78816 for the above-mentioned health plan.
G0219 PET Imaging Whole Body; Melanoma for Non-covered Indications

Medicare

This procedure is not a covered benefit for Medicare beneficiaries.
G0235  PET Imaging Any Site Not Otherwise Specified

This code should be redirected to CPT Codes 78811 through 78816.

Clinical criteria reviewed/revised: 8/27/12, 9/15/11
Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
PET Imaging Full and Partial-Ring PET Scanners Only, For Initial Diagnosis of Breast Cancer and/or Surgical Planning for Breast Cancer (e.g. initial staging of Axillary Lymph Nodes)

This procedure is considered to be investigational/experimental for most health plans. Please check with your health plan’s medical policy.

Clinical criteria reviewed/revised: 8/27/12, 9/15/11
Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
G0252 PET Imaging Full and Partial-Ring PET Scanners Only, For Initial Diagnosis of Breast Cancer and/or Surgical Planning for Breast Cancer (e.g. initial staging of Axillary Lymph Nodes)

Medicare

This procedure is not a covered benefit for Medicare beneficiaries.

Clinical criteria reviewed/revised: 8/27/12, 9/15/11
Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
This code should be redirected to CPT Code 74183.
S8042 MRI Low Field

This code should be redirected to an MRI CPT Code.

Clinical criteria reviewed/revised: 8/27/12, 9/15/11
Medical Advisory Committee reviewed and approved: 9/19/12, 9/21/11
This procedure is not a covered benefit for the above mentioned health plan.
This procedure is not a covered benefit for the above mentioned health plan.
S8085  FDG (F-18 FDG) Imaging Using Dual-Head Coincidence Detection System (Non-dedicated PET Scan)
S8092  Electron Beam Computed Tomography (Also Known as Ultrafast CT, CINET)

Medicare

These procedures are not covered benefits for Medicare beneficiaries.
S8092  Electron Beam Computed Tomography (Also Known as Ultrafast CT, CINET)

Medicare AR, CO, CT, FL, IL, IN, KY, LA, MA, ME, MI, MN, MS, NC, NH, NM, NY, OH, OK, RI, SC, TX, VA, VT, WI, WV

This procedure is not a covered benefit for Medicare beneficiaries in the states above.

References:


3. Local Coverage Determination (LCD) for Computed Cardiac Tomography (CCT) and Computed Tomography Coronary Angiography (CTCA) (L32750), Novitas Solutions, Inc., Colorado accessed at [http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=8&CntrctrType=1%7c9&KeyWord=75571&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=75571&kq=true&bc=IAAAAAAAA&](http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&NCSelection=NCD&PolicyType=Final&s=8&CntrctrType=1%7c9&KeyWord=75571&KeyWordLookUp=Doc&KeyWordSearchType=Exact&CptHcpcsCode=75571&kq=true&bc=IAAAAAAAA&).


6. Local Coverage Article for Ultrafast CT Scan of the Heart (A4510), Wisconsin Physicians Service Insurance Corporation, Illinois, accessed at [http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&ArticleType=Ed%7cKey%7cSAD%7cFAQ&s=19&PolicyType=1%7c9&KeyWord=Ultrafast+CT+Scan+of+the+Heart&KeyWordLookUp=Title&KeyWordSearchType=Exact&kq=true&bc=IAAAAAAAA&](http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&ArticleType=Ed%7cKey%7cSAD%7cFAQ&s=19&PolicyType=1%7c9&KeyWord=Ultrafast+CT+Scan+of+the+Heart&KeyWordLookUp=Title&KeyWordSearchType=Exact&kq=true&bc=IAAAAAAAA&).


13. Local Coverage Determination (LCD) for Cardiac Computed Tomography (CCT) and Coronary Computed Tomography Angiography (CCTA) (L32790), Wisconsin Physicians Service Insurance Corporation, Michigan, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&PolicyType=Final&s=27&CntntrType=1%7c9&CptHcpcsCode=75571&kq=true&bc=IAAAAAAAAAAA.&


16. Local Coverage Determination (LCD) for Cardiac Computed Tomography (CCT) and Coronary Computed Tomography Angiography (CCTA) (L32750), Novitas Solutions, Inc., New Mexico, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&PolicyType=Final&s=32&CntntrType=1%7c9&CptHcpcsCode=75571&kq=true&bc=IAAAAAAAAAAA.&

17. Local Coverage Determination (LCD) for Computerized Tomography & Angiography (CCTA) (L31699), Palmetto GBA, North Carolina, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&PolicyType=Final&s=34&CntntrType=1%7c9&CptHcpcsCode=75571&kq=true&bc=IAAAAAAAAAAA.&

18. Local Coverage Determination (LCD) for Cardiac Computed Tomography (CCT) and Coronary Computed Tomography Angiography (CCTA) (L31699), Palmetto GBA, New Hampshire, accessed at http://www.cms.gov/medicare-coverage-database/search/search-results.aspx?SearchType=Advanced&CoverageSelection=Both&PolicyType=Final&s=35&CntntrType=1%7c9&CptHcpcsCode=75571&kq=true&bc=IAAAAAAAAAAA.&

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S8092 Electron Beam Computed Tomography: Medicare AR, CO, CT, FL, IL, IN, KY, LA, MA, ME, MI, MN, MS, NC, NH, NM, NY, OH, OK, RI, SC, TX, VA, VT, WI, WV

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