Clover

Clinical Guidelines

Inpatient Hospital Stays and and Outpatient Procedures for Select Conditions

Inpatient hospital stays for select conditions approved by the Clover Quality Improvement committee on April 20, 2016. Outpatient procedures for select conditions approved by the Clover Quality Improvement committee on February 15, 2017.

Table of Contents

Clinical Criteria for Inpatient Procedures

Clinical Criteria for Outpatient Procedures

Clinical Criteria for Inpatient Procedures

Abdominal Pain Criteria

Inpatient admissions that meet any of the below criteria listed will be deemed as medically appropriate:

1. CT scan or other imaging demonstrates etiology which must be treated as inpatient
2. Intestinal obstruction
3. Toxic megacolon
4. Acute Aortic dissection
5. Free Air
6. Bowel Ischemia
7. Surgery needed that cannot be performed on ambulatory basis
8. Inability to take medications by mouth after initial 24-48 hours of treatment
9. Presence of intractable nausea and vomiting persistent after initial 24-48 hours of therapy
10. Severe intractable pain not alleviated by oral analgesics and therefore requiring parenteral analgesics beyond 48 hours
11. Appropriate outpatient or observation care antimicrobial treatment unavailable, not effective, or not feasible for an infectious etiology
12. Presence of Sepsis. Sepsis is present if patient has SIRS (Systemic Inflammatory Response Syndrome) AND a source of infection
13. SIRS is present if 2 of the following are present:
    a. Temperature >38°C or <36°C
    b. Heart rate >90/min
    c. Respiratory rate >20/min or Paco2 <32 mm Hg (4.3 kPa)
    d. White blood cell count >12 000/mm3 or <4000/mm3 or >10% immature bands
14. Severe electrolyte abnormalities which could not be corrected within 48 hours

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Chronic Obstructive Pulmonary Disorder

Inpatient admissions that meet any of the below criteria listed will be deemed as medically appropriate:

1. Hemodynamic Instability
2. Significantly reduced peak flows (<200) after 48 hours of treatment
3. Inability to tolerate Oral Medications after 48 hours of treatment
4. Presence of Sepsis, Pneumonia, CHF, Pneumothorax or Pleural Effusion
5. Acute respiratory failure (e.g. need for ventilatory support)
6. Severe comorbid condition (e.g. severe steroid myopathy, acute vertebral fracture) that has acutely worsened pulmonary function
7. New or pre-existing signs or symptoms of COPD (e.g. dyspnea or Tachypnea at rest or with minimal activity) that persist despite outpatient and observation care treatment beyond 48 hours
8. New-onset hypoxemia (room air SaO^{2} less than 90%, PO_{2} less than 60 mm Hg (8.0 kPa)) that persists despite outpatient and observation care treatment beyond 48 hours
9. Hypercarbia (PCO_{2} greater than 40 mm Hg (5.3 kPa))-induced respiratory acidosis (pH less than 7.35) that persists despite outpatient and observation care treatment beyond 48 hours

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Lower GI Bleeding

Inpatient admissions that meet any of the below criteria listed will be deemed as medically appropriate:

1. Significant symptomatic anemia requiring inpatient admission
2. Hemodynamic Instability
3. Active copious bleeding requiring more than 2 units of PRBC's
4. Active gross bleeding per rectum with failure to control bleeding after colonoscopy
5. Coagulopathy
6. Advanced liver disease
7. Irreversible anticoagulation
8. Presence of ischemic colitis
9. Presence of aorto-enteric fistula
10. Presence of intestinal obstruction or peritonitis
11. High-risk low platelet count (e.g., platelet count less than 50,000/mm^3 (50 x10^9/L))
12. Immediate inpatient surgery needed
13. Parenteral nutrition regimen that must be implemented on inpatient basis

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Pneumonia

Inpatient admissions that meet any of the below criteria listed will be deemed as medically appropriate:

1. Presence of sepsis. Sepsis is present if patient has SIRS (Systemic Inflammatory response Syndrome) AND a source of infection
2. SIRS is present if 2 of the following are present:
3. Temperature >38°C or <36°C
4. Heart rate >90/min
5. Respiratory rate >20/min or Paco2 <32 mm Hg (4.3 kPa)
6. White blood cell count >12 000/mm3 or <4000/mm3 or >10% immature bands
7. Hypoxia (PO2 below 60 or Pulse Oximetry Below 92%)
8. Inability to take Oral Medications by mouth after 48 hours of treatment
9. Hemodynamic Instability
10. Persistent severe dyspnea after 48 hours of treatment
11. Immune Compromised
12. AIDS
13. Chronic Steroid Use
14. Chemotherapy
15. Altered mental status that is severe and persistent beyond 48 hours with treatment
16. Bacteremia
17. Outpatient treatment failure as indicated by 1 or more of the following:
18. Failure to respond to antibiotic (e.g. resistant organism)
19. Clinically significant adverse effects from medication (e.g. vomiting)
20. Complications of pneumonia (e.g. empyema, bacteremia)
21. Significant worsening of comorbid conditions necessitating inpatient care (e.g. chronic heart failure)
22. Clinical findings that do not respond to outpatient or observation care treatment
23. Complicated pleural effusions (e.g. empyema, exudative, loculated)

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Syncope

Inpatient admissions that meet any of the below criteria listed will be deemed as medically appropriate:

1. Continued Hemodynamic Instability
2. Presence of Cardiac Arrhythmia as a cause of syncope as a cause for immediate concern
3. Supraventricular tachycardia
4. Ventricular tachycardia
5. Bradycardia as cause of syncope
6. Pacemaker malfunction or emergent requirement for placement of pacemaker
7. Acute MI
8. Structural cardiac disorder (e.g. aortic stenosis) suspected as cause that requires immediate correction
9. Severe Anemia as a cause of syncope
10. Neurologic signs or symptoms that are severe or persistent
11. Acute CVA
12. Post seizure altered mental status lasting more than 24 hours
13. Severe electrolyte abnormalities requiring inpatient intravenous therapy beyond 48 hours
14. Presence of imminently dangerous cause (e.g. subarachnoid hemorrhage, pulmonary embolism)
15. Syncope causing injury requiring hospitalization (ex: multiple rib fractures, hip fracture)

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Transient Ischemic Attack

Inpatient admissions that meet any of the below criteria listed will be deemed as medically appropriate:

1. Persistent, recurrent or evolving deficit
2. Positive Acute Infarct on imaging study (CT Scan or MRI)
3. Immediate inpatient procedure is needed (e.g. endarterectomy).(8)
4. Cardiac arrhythmias of immediate concern (ex: ventricular tachycardia)
5. Any of the following clinically significant cardiac disorder identified that requires inpatient care:
    A. Severe valvular disease
    B. Atrial myxoma
    C. Cardiomyopathy
6. Hypertensive emergency requiring inpatient treatment with intravenous agents beyond 24 hours
7. Parenteral anticoagulation required (e.g. alternative forms of anticoagulation not appropriate or not feasible) as indicated by ALL of the following:
    A. Temporary sub-therapeutic anticoagulation unacceptable because of high risk of short-term venous or arterial thromboembolism due to 1 or more of the following:
        i. Atrial fibrillation suspected as etiology of TIA
        ii. Venous thromboembolism within past 12 months
        iii. Underlying current malignancy
        iv. Patient with mechanical cardiac valve
        v. Underlying hypercoagulable state (e.g. protein C or protein S deficiency, antithrombin deficiency, antiphospholipid antibodies)
    B. Patient at temporary high risk of thromboembolism (e.g. status post orthopedic surgery)
    C. Contraindications to outpatient use of "bridging" agent or alternative oral anticoagulant as indicated by ALL of the following:
        i. Contraindication to outpatient use of low-molecular-weight heparin as "bridging" agent as indicated by 1 or more of the following:
            a. Documented current or history of heparin-induced thrombocytopenia
            b. Severe thrombocytopenia (e.g. platelet count less than 50,000/mm^3 (50 x10^9/L))
            c. Documented allergy to heparin, low-molecular-weight heparin
            d. Renal failure (creatinine clearance less than 30 mL/min/1.73m^2 (0.50 mL/sec/1.73m^2) or on dialysis)
        ii. Contraindication to outpatient use of fondaparinux as "bridging" agent as indicated by 1 or more of the following:
            a. Severe thrombocytopenia (e.g. platelet count less than 50,000/mm^3 (50 x10^9/L))
            b. Hypersensitivity to fondaparinux, related drugs, or product components
            c. Renal failure (creatinine clearance less than 30 mL/min/1.73m^2 (0.50 mL/sec/1.73m^2)
        iii. Oral direct thrombin inhibitor (e.g. dabigatran) or oral coagulation factor Xa inhibitor (e.g. rivaroxaban, apixaban) not appropriate as oral anticoagulation (e.g. indication not appropriate) or contraindicated (e.g. hypersensitivity, creatinine clearance less than 15 mL/min/1.73m^2 (0.25 mL/sec/1.73m^2) or on dialysis)

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Chest Pain

Inpatient admissions that meet any 1 or more of the below criteria listed will be deemed as medically appropriate:

1. Hemodynamic instability
2. Persistent hypoxia not improved after 24-48 hours of therapy
3. Respiratory distress not improved after 24-48 hours of therapy
4. Pulmonary edema not improved after 24-48 hours of therapy
5. Chest pain indicative of serious diagnosis other than coronary artery disease:
   A. Aortic Dissection
   B. Pneumothorax Requiring a Chest Tube
   C. Ruptured Esophagus
   D. Pulmonary Embolus
6. Acute Myocardial Infarction
   A. ST Elevation Myocardial Infarction
7. Angina with acute coronary syndrome:
   A. Elevated Cardiac Enzymes consistent with cardiac injury
   B. EKG with dynamic ischemic changes
   C. Positive Stress Test
   D. Positive cardiac catheterization requiring immediate intervention (PCI or Coronary Bypass Surgery)

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Clinical Criteria for Outpatient Procedures

PET with concurrently acquired CT for attenuation correction and anatomical localization imaging; skull base to mid-thigh

CPT Code 78815

Positron emission tomography (PET), with or without simultaneous computed tomography (PET-CT), for tumor imaging may be indicated for 1 or more of the following:

I. Cancer or neoplasm, initial evaluation or staging needed (from diagnosis through initial staging), as indicated by ALL of the following:
   A. Additional imaging information required to assess 1 or more of the following:
      1. Anatomic extent of tumor, if results will assist with selection of optimal anti-tumor treatment
      2. Appropriateness of patient for invasive diagnostic or therapeutic procedure
      3. Optimal anatomic location for invasive procedure
   B. PET or PET-CT not yet performed (prior to initiation of treatment)
   C. Solid tumor malignancy, biopsy-proven or strongly suspected
   D. Treatment not yet initiated
   E. Type of tumor is
      1. Adrenal cancer
      2. Anal cancer
      3. Brain and spinal cord cancer
      4. Breast cancer
      5. Cervical cancer
      6. Colorectal cancer
      7. Esophageal or gastro-esophageal junction cancer
      8. Gallbladder and bile duct cancer
      9. Gastric cancer
      10. Head and neck cancer (non-thyroid, non-central nervous system)
      11. Kidney cancer
      12. Liver cancer
      13. Lung cancer, non-small cell type
      14. Lung cancer, small cell type
      15. Lung nodule, solitary
      16. Lymphoma, Hodgkin or non-Hodgkin
      17. Melanoma
      18. Multiple myeloma
      19. Neuroendocrine cancer
      20. Osteosarcoma or Ewing sarcoma
      21. Ovarian cancer
      22. Pancreatic cancer
      23. Paraneoplastic syndrome, including neurologic syndrome
      24. Pleural mesothelioma, malignant
      25. Skin cancer, nonmelanoma (includes basal cell and squamous cell)
      26. Soft tissue sarcoma, including gastrointestinal stromal tumors

27. Testicular cancer (seminoma)
28. Thymus cancer
29. Thyroid cancer
30. Unknown primary

II. Cancer or neoplasm, subsequent evaluation or staging needed (after completion of initial treatment through monitoring for recurrence), as indicated by ALL of the following:
   A. Additional imaging required to assess 1 or more of the following:
      1. Residual disease, suspected, after completion of initial treatment (re-staging)
      2. Recurrent disease, suspected, well after completion of treatment (monitoring), as indicated by 1 or more of the following:
         a. Abnormal findings on physical examination
         b. Abnormal laboratory tests or other imaging studies
         c. New symptoms
   B. PET or PET-CT has not yet been performed for suspected residual or recurrent disease.
   C. Type of tumor is 1 or more of the following:
      1. Anal cancer
      2. Brain and spinal cord cancer
      3. Breast cancer
      4. Cervical cancer
      5. Colorectal cancer
      6. Endometrial cancer
      7. Esophageal or gastro-esophageal junction cancer
      8. Gastric cancer
      9. Head and neck cancer (non-thyroid, non-central nervous system)
      10. Lung cancer, non-small cell type
      11. Lung cancer, small cell type
      12. Lymphoma, Hodgkin or non-Hodgkin
      13. Melanoma
      14. Multiple myeloma
      15. Neuroendocrine cancer
      16. Osteosarcoma or Ewing sarcoma
      17. Ovarian cancer
      18. Skin cancer, non-melanoma (includes basal cell and squamous cell
      19. Soft tissue sarcoma, including gastrointestinal stromal tumors
      20. Testicular cancer (seminoma)
      21. Thyroid cancer

Duplex scan of extra-cranial arteries; complete bilateral study

CPT Code 93880

Duplex (Doppler) scan, carotid or extra-cranial, may be indicated for 1 or more of the following:

I. Cervical (carotid) bruit, when results will impact treatment plan
II. Preoperative screening before major cardiac surgery for high-risk patient, as indicated by 1 or more of the following:
    A. Age older than 65 years
    B. Cervical or carotid bruit
    C. Diabetes mellitus
    D. History of hypertension
    E. History of smoking
    F. History of stroke or transient ischemic attack
    G. Left main coronary artery stenosis
    H. Peripheral arterial disease
III. Stroke or transient ischemic attack symptoms (eg, monocular blindness, unilateral weakness or paresthesia, aphasia)
IV. Surveillance after carotid endarterectomy, or after carotid angioplasty and stenting, as indicated by 1 or more of the following:
    A. Need to assess arterial patency and rule out development of new lesions; intervals include 1 month postoperatively, 6 months postoperatively, and annually thereafter
    B. New signs or symptoms
V. Repeat evaluation of specific area or structure with same imaging modality, as indicated by 1 or more of the following:
    A. Change in clinical status (eg, worsening symptoms or new associated symptoms)
    B. Need for interval reassessment that may impact treatment plan
    C. Need for re-imaging either prior to or after performance of invasive procedure

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EGD, flexible, trans-oral; with biopsy, single or multiple

CPT Code 43239

INDICATIONS: The procedure can only be allowed if abnormal signs or symptoms or known disease are present.

I. Indications which support EGD for diagnostic purposes are as follows:
    A. Upper abdominal distress which persists despite an appropriate trial of therapy;
    B. Upper abdominal distress associated with symptoms and/or signs suggesting serious organic disease (e.g., prolonged anorexia and weight loss);
    C. Dysphagia or odynophagia;

D. Esophageal reflux symptoms which are persistent or recurrent despite appropriate therapy;
E. 4-8 weeks of PPI use
F. Persistent vomiting of unknown cause;
G. Other systemic diseases in which the presence of upper GI pathology might modify other planned management. Examples include patients with a history of GI bleeding who are scheduled for organ transplantation; long term anticoagulation; and chronic non-steroidal therapy for arthritis;
H. X-ray/Imaging evidence of:
I. A suspected neoplastic lesion, for confirmation and specific histologic diagnosis;
J. Gastric or esophageal ulcer; or
K. Evidence of upper gastrointestinal tract stricture or obstruction.
L. The presence of gastrointestinal bleeding:
M. In most actively bleeding patients or those recently stopped;
N. When surgical therapy is contemplated;
O. When re-bleeding occurs after acute self-limited blood loss or after endoscopic therapy;
P. When portal hypertension or aorto-enteric fistula is suspected; or
Q. For presumed chronic blood loss and for iron deficiency anemia when colonoscopy is negative.
R. When sampling of duodenal or jejunal tissue or fluid is indicated;
S. To assess acute injury after caustic agent ingestion; or
T. Intraoperative EGD when necessary to clarify location or pathology of a lesion.

II. Sequential or periodic diagnostic upper GI endoscopy may be indicated for an appropriate number of procedures for active or symptomatic conditions.
A. For follow-up of selected esophageal, gastric or stomal ulcers to demonstrate healing (frequency of follow-up EGDs is variable, but every two to four months until healing is demonstrated is reasonable);
B. For follow-up in patients with prior adenomatous gastric polyps (approximate frequency of follow-up EGDs would be every one to four years depending on the clinical circumstances, with occasional patients with sessile polyps requiring every six-month surveillance initially);
C. For follow-up for adequacy of prior sclerotherapy or banding of esophageal varices (approximate frequency of follow-up EGDs is very variable depending on the state of the patient but every six to twenty-four months is reasonable after the initial sclerotherapy/banding sessions are completed);
D. For follow-up of Barrett's esophagus (approximate frequency of follow-up EGDs is one to two years with biopsies, unless dysplasia or atypia is demonstrated, in which case a repeat biopsy in two to three months might be indicated); or
E. For follow-up in patients with familial adenomatous polyposis (approximate frequency of follow-up EGDs would be every two to four years, but might be more frequent, such as every six to twelve months if gastric adenomas or adenomas of the duodenum were demonstrated).

III. LIMITATIONS:
A. Indications for which an EGD is generally NOT covered by Medicare are as follows:
B. Distress which is chronic, non-progressive, atypical for known organic disease, and is considered functional in origin (there are occasional exceptions in which an endoscopic examination may be done once to rule out organic disease, especially if symptoms are unresponsive to therapy);
C. Uncomplicated heartburn responding to medical therapy;
D. Metastatic adenocarcinoma of unknown primary site when the results will not alter management;
E. X-ray/Imaging evidence of:
1. asymptomatic or uncomplicated sliding hiatus hernia;

2. uncomplicated duodenal bulb ulcer which has responded to therapy; or
3. Deformed duodenal bulb when symptoms are absent or respond adequately to ulcer therapy;

F. Routine screening of the upper gastrointestinal tract;
G. Patients without current gastrointestinal symptoms about to undergo elective surgery for non-upper gastrointestinal disease; or
H. When lower G.I. endoscopy reveals the cause of symptoms, abnormal signs or laboratory tests (e.g., colonic neoplasm with iron deficiency anemia). Exceptions can be considered if medical necessity for this procedure can be demonstrated.

IV. Sequential or periodic diagnostic EGD is not indicated for:
A. Surveillance for malignancy in patients with gastric atrophy, pernicious anemia, treated achalasia, or prior gastric operation;
B. Surveillance of healed benign disease such as esophagitis, gastric or duodenal ulcer; or
C. Surveillance during chronic repeated dilations of benign strictures unless there is a change in status.

MRI, brain (including brainstem); without contrast material

CPT Code 70551

MRI, brain (including brainstem); without contrast material, followed by contrast material(s) and further sequences

CPT Code 70553

Brain MRI will be approved if 1 or more of the following are present:

I. Acoustic neuroma, as indicated by 1 or more of the following:
A. Monitoring of acoustic neuroma without surgery; intervals include 1 or more of the following
1. Six and 12 months after initial diagnosis
2. Annually for next year
3. Every 1 to 2 years thereafter
B. Monitoring after radio-surgical removal of acoustic neuroma: every 3 years

II. Anatomy or structural defect evaluation needed, with presence of 1 or more of the following
A. Chiari malformation
B. Congenital anomaly, suspected (eg, Dandy-Walker malformation, septo-optic dysplasia, agenesis of corpus callosum)
C. Neurocutaneous disorders (eg, neurofibromatosis, Sturge-Weber syndrome, tuberous sclerosis complex, von Hippel-Lindau disease)
D. Hydrocephalus, as indicated by 1 or more of the following
1. Adult with known hydrocephalus, and need for follow-up
2. Adult with suspected normal pressure hydrocephalus, as indicated by 1 or more of the following:
a. Downward gaze (ie, sunset gaze)
b. Gait disturbance

c. Recent onset of dementia or worsening of established dementia
d. Urinary incontinence

3. Ventriculo-peritoneal shunt in place and need for further evaluation, as indicated by 1 or more of the following:
   a. Accelerated head growth
   b. Acute neurologic deficit
   c. Decreased mentation
   d. Headache
   e. Irritability
   f. Lethargy
   g. Loss of developmental milestones
   h. New or more frequent seizures
   i. Shunt reservoir malfunctioning
   j. Unexplained fever
   k. Vomiting
4. Ventriculo-peritoneal shunt in place and need for follow-up

III. Anosmia, and suspicion for central nervous system etiology, as indicated by 1 or more of the following
   A. Anosmia present since birth
   B. Cognitive impairment
   C. History of head or facial trauma
   D. Hypogonadism
   E. Olfactory hallucinations
   F. Parkinson disease or other neurodegenerative disorder, known or suspected

IV. Cancer or neoplasm evaluation or staging needed, as indicated by 1 or more of the following
   A. Abnormal or nondiagnostic CT scan finding, and need for further evaluation
   B. Central nervous system disease signs or symptoms in cancer patient, as indicated by 1 or more of the following
      1. Altered mental status
      2. Ataxia or gait disturbance
      3. Change in speech pattern (eg, aphasia, dysarthria)
      4. Focal sensory deficit of face, limb, or whole side of body
      5. Focal weakness of face, limb, or whole side of body
      6. Visual disturbance (eg, diplopia, visual field defect, central nystagmus, cortical visual loss, Horner syndrome)
   C. Initial staging of non-small cell lung cancer, stage II disease or greater based on pathologic or imaging findings, as indicated by 1 or more of the following
      1. Evidence of abdominal metastases on CT scan
      2. Hilar lymph node greater than 1 cm in size on chest imaging
      3. Multiple pulmonary lesions on chest imaging
      4. Pleural or pericardial effusion present
      5. Primary tumor greater than 3 cm in size
   D. Initial staging of small cell lung cancer
   E. Pituitary or sellar tumor, known or suspected, as indicated by 1 or more of the following :
      1. Pituitary tumor signs or symptoms, as indicated by 1 or more of the following:
         a. Abnormal sella turcica on plain x-ray or CT scan

b. Acromegaly
c. Amenorrhea or oligomenorrhea in premenopausal female
d. Central cortisol insufficiency
e. Central hyperthyroidism
f. Central hypothyroidism
g. Cushing disease
h. Deficiency of all anterior pituitary hormones
i. Diabetes insipidus
j. Galactorrhea
k. Growth hormone deficiency
l. Hirsutism
m. Hyperprolactinemia
n. Hypogonadotropic hypogonadism
o. Oculomotor palsies
p. Unexplained visual field deficit

2. Surveillance after treatment of pituitary tumor; intervals include 1 or more of the following:
   a. Three to 4 months post surgery to assess completeness of resection
   b. Annually for 3 to 5 years, then less often if stable
3. Surveillance of pituitary incidentaloma; intervals include 1 or more of the following
   a. For macroincidentaloma: 6 months after initial scan, then annually for next 3 years if stable in size, and less often thereafter
   b. For microincidentaloma: 1 year after initial scan, then every 1 to 2 years for next 3 years if stable in size, and less often thereafter [B]

F. Planning for stereotactic radiosurgery
G. Surveillance after treatment of primary brain tumor; intervals include 1 or more of the following:
   1. At completion of treatment
   2. Every 3 months for 2 years
H. Surveillance for recurrence of treated brain metastasis: every 3 months for 1 year, then as clinically indicated

V. Cerebral edema, suspected
VI. Delirium or change in level of consciousness
VII. Dementia
VIII. Demyelinating disease, known or suspected (eg, multiple sclerosis), as indicated by 1 or more of the following
   A. Clinically isolated syndrome or multiple sclerosis signs or symptoms that cannot be otherwise explained (eg, temporary loss of vision, diplopia, ascending numbness or tingling, episodic clumsiness)
   B. Multiple sclerosis, and need for further evaluation, as indicated by 1 or more of the following:
      1. Increasing cognitive impairment
      2. Symptoms suggesting treatment failure
      3. Transition from one subtype of multiple sclerosis to another is suspected (eg, from relapsing-remitting to secondary-progressive).
   C. Repeat study if diagnosis unclear after initial central nervous system imaging and after at least 30 days from onset of symptoms
IX. Developmental delay

X. Dizziness or vertigo, as indicated by 1 or more of the following
    A. Brainstem findings (eg, dysarthria, Horner syndrome)
    B. Cerebellar findings (eg, incoordination of voluntary movements, intention tremor, disorder of equilibrium or gait, diminished muscle tone)
    C. Focal neurologic findings (eg, weakness, numbness, paresthesias on one side of body)
    D. New-onset headache or neck pain
    E. Unresponsive to antibiotic treatment for sinus or ear infection
    F. Unresponsive to symptomatic treatment

XI. Epilepsy or seizure disorder, suspected or known, as indicated by 1 or more of the following
    A. Abnormal neurologic examination (eg, focal deficit, stigmata of neurocutaneous or cerebral malformation)
    B. Change in seizure pattern
    C. First focal seizure
    D. First unprovoked generalized seizure
    E. More frequent seizures despite anticonvulsant medication
    F. Preoperative evaluation when surgery being considered
    G. Status epilepticus

XII. Headache with possible underlying structural cause, as indicated by 1 or more of the following
    A. Personal history suggesting underlying infectious, inflammatory, or structural cause, as indicated by 1 or more of the following:
        1. Onset of headache after age 50 years
        2. Patient with history of cancer
        3. Patient with HIV or immunosuppression
    B. Signs or symptoms suggesting underlying infectious, inflammatory, or structural cause, as indicated by 1 or more of the following:
        1. Abnormal findings on neurologic examination, including altered mental status or personality
        2. Accompanied by seizure
        3. Accompanied by vomiting
        4. Change in frequency, severity, or clinical features of headache from what patient has commonly experienced
        5. Cluster-type headache
        6. Meningeal signs
        7. Motor or sensory aura, or aura that has changed character
        8. New or progressive headache that persists for days
        9. Persistent headache without family history
        10. Precipitated by exertion, coughing, sneezing, bending down, or sexual intercourse
        11. Present upon awakening
        12. Systemic symptoms (ie, fever, myalgias, weight loss, scalp tenderness)
        13. Temporal arteritis, suspected
        14. Unresponsive to medical treatment
        15. Worst headache of patient's life (ie, "thunderclap" headache)

XIII. Hearing loss, as indicated by 1 or more of the following
    A. Associated with neurologic symptoms or focal findings
    B. Congenital sensorineural hearing loss

C. Postoperative assessment of vestibular schwannoma (eg, after resection or stereotactic radiosurgery)
D. Preoperative imaging for cochlear implant
E. Unexplained unilateral sensorineural hearing loss documented by audiometry

XIV. Infection, known or suspected, as indicated by 1 or more of the following
A. Abscess of brain, known, and need for follow-up
B. Abscess of brain, suspected (eg, history of sinus infection, headache, fever, neurologic abnormalities)
C. Immunosuppressed patient (eg, receiving chemotherapy, HIV-positive) with recent onset of neurologic abnormalities
D. Neurocysticercosis, suspected
E. Viral encephalitis, suspected (eg, herpes infection, confusion, neurologic abnormalities)

XV. Intracranial vasculitis, suspected, and need for evaluation of possible sequelae

XVI. Neurologic disease signs or symptoms, as indicated by 1 or more of the following
A. Ataxia or gait disturbance
B. Change in speech or language (eg, dysarthria, aphasia)
C. Cranial nerve palsy
D. Focal sensory deficit (eg, numbness, paresthesias) of face, limb, or whole side of body
E. Focal weakness of face, limb, or whole side of body
F. Horner syndrome (unilateral miosis, ptosis, facial anhydrosis)
G. Papilledema
H. Visual disturbance (eg, diplopia, visual field defect, nystagmus, visual loss)

XVII. Parkinson disease or other neurodegenerative disorders, as indicated by 1 or more of the following
A. Established Parkinson disease and 1 or more of the following:
1. Atypical features unresponsive to levodopa
2. Prior to surgery or deep brain stimulation
B. New onset of symptoms suggestive of Parkinson disease or other neurodegenerative disorder

XVIII. Precocious puberty (central), as indicated by ALL of the following
A. Clinical findings suggestive of central precocious puberty
B. Patient has been evaluated by pediatric endocrinologist.

XIX. Stroke (ischemic) or transient ischemic attack, as indicated by 1 or more of the following
A. Aphasia
B. Ataxia
C. Decreased level of consciousness
D. Dysarthria
E. Follow-up of CT scan findings atypical for stroke
F. Monocular blindness (ie, amaurosis fugax)
G. Paresthesias
H. Transient global amnesia
I. Visual loss
J. Weakness or sensory loss on one side of body

XX. Syncope, as indicated by 1 or more of the following
A. Abnormality on neurologic examination
B. Bowel or bladder incontinence
C. Witnessed tonic-clonic seizure

XXI. Trauma, as indicated by 1 or more of the following

A. Carotid or vertebral artery dissection, suspected
B. Minor or subacute closed head injury with cognitive or neurologic deficit, and CT scan contraindicated or not available, or results indeterminate
C. Moderate or severe acute closed head injury, and CT scan contraindicated or not available, or results indeterminate
D. Subacute or chronic closed head injury with cognitive or neurologic deficit

XXII. Repeat evaluation of specific area or structure with same imaging modality, as indicated by 1 or more of the following
A. Change in clinical status (eg, worsening symptoms or new associated symptoms)
B. Need for interval reassessment that may impact treatment plan
C. Need for re-imaging either prior to or after performance of invasive procedure

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CT, thorax; without contrast

CPT Code 71250

CT, thorax; with contrast material(s)

CPT Code 71260

Chest CT scan may be indicated for 1 or more of the following:

I. Abnormal chest x-ray findings, as indicated by 1 or more of the following:
A. Bronchopleural fistula, suspected
B. Congenital abnormalities of mediastinal vasculature, known or suspected (eg, double aortic arch, pulmonary artery sling, innominate artery compression syndrome)
C. Congenital abnormalities of tracheobronchial tree, known or suspected (eg, bronchial agenesis, tracheal stenosis)
D. Cystic or cavitary lesion
E. Foreign body aspiration, known or suspected, when imaging results will impact management
F. Hilar adenopathy
G. Interstitial or other systemic lung disease pattern (eg, reticular, bronchial wall thickening, honeycombing)
H. Lung mass
I. Mediastinal mass or enlargement
J. Multiple pulmonary nodules in smoker, and need for interval follow-up
K. Nonspecific chest x-ray finding in febrile neutropenic patient
L. Persistent atelectasis
M. Pleural effusion poorly responsive to drainage and other conservative treatments
N. Pleural thickening or pleural plaque
O. Pneumoconiosis, suspected due to exposure to hazardous dusts (eg, asbestos, beryllium, coal, silica)
P. Solitary pulmonary nodule, as indicated by 1 or more of the following

1. Need for initial evaluation after being noted on plain chest x-ray
2. Need for interval follow-up of benign-appearing solitary pulmonary nodule less than 10 mm in size

Q. Tracheobronchomalacia, known or suspected

II. Anatomic guidance during percutaneous drainage of lung abscess

III. Anatomic guidance during percutaneous pleural, lung, or mediastinal biopsy

IV. Cancer or neoplasm evaluation or staging needed, as indicated by 1 or more of the following

A. Anal cancer, as indicated by 1 or more of the following
1. Initial staging
2. Post-treatment surveillance: annually for 3 years

B. Bladder or urethral cancer and 1 or more of the following
1. Initial staging of muscle-invasive disease
2. Metastatic disease, suspected, as indicated by 1 or more of the following:
a. Abnormal finding on plain chest x-ray
b. Advanced disease on transurethral resection of bladder tumor specimen
c. Alkaline phosphatase elevated
d. Bladder wall thickening or mass on bimanual examination under anesthesia prior to cystoscopy
e. Bone scan positive
f. Liver metastasis on abdominal imaging
g. Lymph node involvement noted on pelvic or abdominal imaging
3. Surveillance of recurrence or detection of metachronous bladder cancer after curative intent therapy

C. Bone cancer and 1 or more of the following
1. Initial staging
2. Abnormal finding on plain chest x-ray
3. Monitoring response after treatment completed
4. Post-treatment surveillance for local Ewing sarcoma recurrence; intervals include 1 or more of the following
a. Every 2 to 3 months for first 2 years, then decreasing frequency through year 5
b. Annually after 5 years
5. Post-treatment surveillance for local osteosarcoma recurrence; intervals include 1 or more of the following
a. Every 3 months for 2 years
b. Every 4 months for year 3
c. Every 6 months for years 4 and 5
d. Annually after 5 years
6. Previously treated patient with respiratory symptoms

D. Breast cancer, as indicated by 1 or more of the following
1. Initial staging of invasive disease
2. Metastatic disease

E. Cancer of unknown primary, as indicated by ALL of the following
1. Biopsy that demonstrates adenocarcinoma, undifferentiated neoplasm, or carcinoma not specified
2. Lung malignancy, suspected, as indicated by 1 or more of the following

a. Abnormal finding on plain chest x-ray
b. Axillary or supraclavicular lymphadenopathy
c. Axillary or supraclavicular lymph node biopsy is positive
d. Evidence of liver metastases
e. Evidence of retroperitoneal mass
f. Malignant pleural effusion

F. Colorectal cancer, as indicated by 1 or more of the following
1. Initial staging
2. Initial workup of metastatic synchronous adenocarcinoma, known or suspected
3. Carcinoembryonic antigen elevated
4. Post-treatment surveillance after resection of lung or liver metastases: every 3 to 6 months for 2 years, then every 6 to 12 months to total of 5 years
5. Post-treatment surveillance in patient without metastatic disease who is at high risk of recurrence (ie, lymphatic invasion, poorly differentiated tumor, venous invasion): annually for up to 5 years

G. Esophageal cancer, as indicated by 1 or more of the following
1. Initial staging
2. Monitoring response after treatment completed
3. Post-treatment surveillance in advanced disease after esophagectomy: every 6 to 12 months for 2 to 3 years
4. Post-treatment surveillance in advanced disease after nonsurgical treatment: every 6 to 9 months for 2 years, then annually to total of 5 years
5. Preoperative planning
6. Recurrence, suspected
7. Symptoms of obstruction or mediastinal spread
8. Tracheoesophageal fistula, suspected

H. Gastric cancer, as indicated by 1 or more of the following
1. Initial staging
2. Monitoring response after treatment completed
3. New symptoms
4. Restaging, if disease is initially unresectable or patient is medically unfit for surgery

I. Head and neck cancer, and need for follow-up of high-risk patient

J. Kidney cancer, as indicated by 1 or more of the following
1. Initial staging
2. Abnormal finding on plain chest x-ray
3. Follow-up of low-risk patient: annually for 5 years
4. Follow-up after partial or radical nephrectomy for stage I disease: annually for 3 years, then as clinically indicated
5. Follow-up after radical nephrectomy for stage II or III disease: starting within 3 to 6 months after surgery and continuing every 3 to 6 months for at least 3 years, then annually up to 5 years
6. Respiratory symptoms

K. Lung cancer (primary), as indicated by 1 or more of the following
1. Initial staging to identify candidates for surgical resection
2. History of lung cancer and new symptoms or abnormal finding on plain chest x-ray
3. Monitoring response after treatment completed (chemotherapy or radiation)

4. Post resection to establish new baseline, every 6 to 12 months for 2 years, then annually
5. Restaging patient for salvage therapy
6. Screening for lung cancer in high-risk patient, as indicated by ALL of the following
    a. Age 55 to 79 years
    b. Current smoker, or quit smoking cigarettes within last 15 years
    c. History of cigarette smoking of 30 pack-years or more
7. Superior vena cava syndrome, suspected (ie, venous obstruction by tumor)
8. Surveillance of recurrence or detection of metachronous tumors after curative intent therapy; intervals include 1 or more of the following
    a. Every 6 to 12 months for 2 years
    b. Annually after 2 years

L. Lymphoma, as indicated by 1 or more of the following
1. Initial staging
2. Detection of residual disease based on clinical symptoms
3. End-of-treatment restaging (usually performed 3 months after completion of all treatment)
4. Following complete surgical resection (usually performed as baseline study within 4 to 6 months of surgery, then as clinically indicated)
5. Monitoring response after chemotherapy (usually performed after 4 cycles)
6. Monitoring response after radiotherapy
7. Post-treatment surveillance, as indicated by 1 or more of the following:
    a. For Hodgkin lymphoma: once within 12 months, then as clinically indicated
    b. For non-Hodgkin lymphoma: every 6 to 12 months for 2 to 5 years after treatment completed

M. Melanoma, known or suspected, and 1 or more of the following
1. Initial staging
2. Abnormal finding on plain chest x-ray
3. Nodal, local, or distant recurrence
4. Respiratory symptoms

N. Mesothelioma, known or suspected, and 1 or more of the following
1. Initial staging and determination of tumor resectability
2. Pleural thickening or effusion on plain chest x-ray
3. Recurrence, suspected

O. Ovarian cancer, as indicated by 1 or more of the following
1. Initial preoperative evaluation
2. Following completed chemotherapy
3. Advanced disease or recurrence, suspected, as indicated by 1 or more of the following:
    a. Elevated serum alpha-fetoprotein levels (eg, for suspected advanced disease or recurrence of germ cell ovarian tumors such as teratoma)
    b. Elevated serum beta-hCG (eg, for suspected advanced disease or recurrence of germ cell ovarian tumors)
    c. Elevated serum CA-125 level (eg, for suspected advanced disease or recurrence of epithelial ovarian cancer)
    d. Elevated serum LDH level (eg, for suspected advanced disease or recurrence of other germ cell tumors)
    e. Signs or symptoms of advanced disease or recurrence (eg, weight loss, anorexia, nausea, vomiting)

P. Soft tissue sarcoma and 1 or more of the following
    1. Initial staging
    2. Monitoring response after primary treatment completed (eg, surgery, radiation, chemotherapy)
    3. Post-treatment surveillance; intervals include 1 or more of the following:
        a. For stage I disease: every 6 to 12 months
        b. For all other stages: every 3 to 6 months for 2 to 3 years, every 6 months for years 4 and 5, and annually after 5 years
    4. Recurrence, suspected
Q. Testicular cancer and 1 or more of the following
    1. Initial staging and 1 or more of the following
        a. Abnormal abdominal CT scan findings
        b. Abnormal plain chest x-ray findings
    2. Post adjunctive chemotherapy or radiotherapy for treatment of pulmonary metastases; once if normal, repeat if retreatment needed
    3. Recurrence, suspected, as indicated by 1 or more of the following:
        a. Abnormal finding on plain chest x-ray
        b. Liver function blood test results abnormal
        c. Lymph nodes palpable
        d. Rising alpha-fetoprotein levels
        e. Rising beta-hCG levels
        f. Rising lactate dehydrogenase levels
R. Thyroid cancer and ALL of the following
    1. Postoperative evaluation of thyroid cancer needed (6 to 12 weeks post thyroidectomy)
    2. Residual thyroid cancer suspected, as indicated by ALL of the following:
        a. Ablation with iodine-131 not appropriate
        b. Absence of anti-thyroglobulin antibodies
        c. Thyroglobulin level greater than 5
S. Uterine cancer and 1 or more of the following
    1. Initial staging
    2. Abnormal finding on plain chest x-ray
    3. Post-treatment surveillance of uterine sarcoma: every 3 to 6 months for 2 to 3 years, then every 6 months for next 2 years, then annually thereafter
    4. Respiratory symptoms
    5. Restaging after local pelvic recurrence

V. Chest wall pathology, as indicated by 1 or more of the following
    A. Abnormality of ribs, scapula, or chest wall noted on plain x-ray
    B. Abscess of chest wall, suspected
    C. Concern for effect on adjacent anatomic structures
    D. Deep or large mass
    E. Mass that crosses anatomic boundaries
    F. Pain in chest wall
    G. Progressive enlargement
    H. Vascular lesion of skin with growth or discoloration of overlying skin
VI. Collagen vascular disease, as indicated by ALL of the following
    A. Previous diagnosis of collagen vascular disease, as indicated by 1 or more of the following:

1. Ankylosing spondylitis
2. Mixed connective tissue disease
3. Polymyositis
4. Rheumatoid arthritis
5. Scleroderma (ie, systemic sclerosis)
6. Sjogren syndrome
7. Systemic lupus erythematosus

B. Pulmonary disease signs or symptoms, as indicated by 1 or more of the following:
1. Abnormality on plain chest x-ray
2. Chronic cough
3. Dyspnea
4. Pleural effusion

VII. Congenital malformation of chest, lungs, mediastinum, or great vessels, known or suspected, when additional imaging required for management

VIII. Cystic fibrosis, as indicated by 1 or more of the following
A. Detection of early disease
B. Monitoring disease progression

IX. Infection, known or suspected, as indicated by 1 or more of the following
A. Bronchiectasis, suspected, as indicated by 1 or more of the following
1. Chronic cough
2. Chronic respiratory infections
3. Clubbing
4. Cough-induced fracture of ribs
5. Growth failure
6. Hemoptysis
7. Sputum production

B. Neutropenic patient (absolute neutrophil count of less than 500 cells/mm 3 (0.5 x10 9 /L)) with fever and1 or more of the following
1. Persistent fever after 5 days of treatment with antibiotics (with or without antifungals)
2. Signs and symptoms of pulmonary infection (ie, cough, dyspnea, pleural rub)

C. Pneumonia and 1 or more of the following
1. Complicated or complex pneumonia with possible abscess or cavity formation
2. Follow-up chest x-ray (after 11 to 16 weeks) shows persistent abnormality
3. Immunocompromised patient
4. No clinical improvement after 4 weeks
5. Pandemic H1N1 pneumonia, suspected
6. Recurrent episodes

D. Tuberculosis (pulmonary), known or suspected, and 1 or more of the following
1. Chest x-ray results normal or inconclusive
2. Detection of pulmonary complications (eg, effusion, bronchopleural fistula, empyema)

X. Interstitial lung disease, as indicated by 1 or more of the following
A. Interstitial or other systemic lung disease pattern on chest x-ray (eg, reticular, bronchial wall thickening, honeycombing)
B. Monitoring of known interstitial lung disease
C. Pulmonary disease signs or symptoms, as indicated by 1 or more of the following:

1. Exertional breathlessness
2. Inspiratory rales or crackles
3. Nonproductive cough
4. Pulmonary function test that reveals restrictive lung disease or reduced diffusing capacity

XI. Post bone marrow transplant and 1 or more of the following
- A. Abnormal finding on plain chest x-ray
- B. Chronic cough
- C. Dyspnea
- D. New positive culture of mold from any site
- E. Other new and potentially significant pulmonary symptoms or signs
- F. Persistent fever after 5 days of treatment with antibiotics (with or without antifungals)
- G. Positive fungal markers (ie, serum galactomannan, serum beta-D-glucan)

XII. Post lung transplant and 1 or more of the following
- A. Abnormal finding on plain chest x-ray
- B. Acute or chronic rejection signs or symptoms (eg, dyspnea, fever, decreased exercise tolerance)
- C. Bronchiolitis obliterans signs or symptoms
- D. Central airway postoperative complications, suspected (eg, anastomotic dehiscence, bronchial stenosis)
- E. Vascular complications, suspected (eg, pseudoaneurysm, pulmonary artery anastomotic stenosis)

XIII. Post solid organ transplant, and fungal infection suspected, as indicated by 1 or more of the following
- A. Positive culture or serum polymerase chain reaction for Aspergillus or other mold
- B. Positive fungal markers (ie, serum galactomannan, serum beta-D-glucan)

XIV. Preoperative or preprocedural planning needed, as indicated by 1 or more of the following
- A. Confirmed pulmonary tuberculosis
- B. Primary hyperparathyroidism, and sestamibi nuclear scan positive for mediastinal location of adenoma
- C. Prior to anticipated lung resection to predict postoperative pulmonary function reserve if nuclear medicine perfusion scanning indeterminate

XV. Pulmonary disease signs or symptoms, as indicated by 1 or more of the following
- A. Chronic cough (persisting for 3 or more weeks) and ALL of the following
  1. Cigarette smoking discontinued
  2. Cough-inducing medications discontinued
  3. No clinical improvement after adequate trial of medical therapy for potential causes
  4. Unexplained by plain chest x-ray
- B. Dyspnea (shortness of breath) and ALL of the following
  1. Absence of obstructive lung disease (eg, COPD, asthma)
  2. Moderate or severe symptoms
  3. No cardiac explanation
  4. Unexplained by plain chest x-ray
- C. Hemoptysis and 1 or more of the following
  1. Abnormal finding on plain chest x-ray, as indicated by 1 or more of the following
     a. Lung cavitation
     b. Lung mass
     c. Lung parenchymal disease on plain chest x-ray
     d. Slippage of previously placed endobronchial stent, suspected

2. After trauma
3. Autoimmune disease, known or suspected (eg, granulomatosis with polyangiitis, Churg-Strauss syndrome, Goodpasture disease)
4. Bronchiectasis, known or suspected
5. Bronchitis or other pulmonary infection and ALL of the following
    a. Hemoptysis continues despite brief period of observation
    b. Infection has been appropriately treated
6. History of malignancy
7. Increased risk of lung cancer, as indicated by 1 or more of the following
    a. Age older than 40 years
    b. Asbestos exposure
    c. COPD
    d. More than 40 packs-per-year history of cigarette smoking
8. Massive (ie, greater than 300 mL) or recurrent hemoptysis
9. Systemic disease signs or symptoms (eg, weight loss, fever, anemia)

XVI. Trauma, known or suspected, as indicated by 1 or more of the following
- A. Aortic injury, suspected, and chest CT angiography contraindicated or not available
- B. Chest trauma
- C. Diaphragmatic rupture, suspected
- D. Esophageal trauma or perforation, and additional information required beyond general clinical assessment and endoscopy

XVII. Tuberous sclerosis complex, as indicated by 1 or more of the following
- A. Asymptomatic female age 18 years or older
- B. Lymphangioleiomyomatosis, suspected (eg, dyspnea, exertional dyspnea)

XVIII. Repeat evaluation of specific area or structure with same imaging modality, as indicated by 1 or more of the following:
- A. Change in clinical status (eg, worsening symptoms or new associated symptoms)
- B. Need for interval reassessment that may impact treatment plan
- C. Need for re-imaging either prior to or after performance of invasive procedure

CTA, chest (noncoronary), with contrast material(s), including noncontrast images, if performed, and image postprocessing

CPT Code 71275

Chest CT angiography (CTA) may be indicated for 1 or more of the following

I. Anatomy or structural vascular defect evaluation needed, as indicated by 1 or more of the following
   A. Aortic arch abnormality
   B. Coarctation of thoracic aorta
   C. Follow-up after surgical correction of vascular anomaly
   D. Patent ductus arteriosus
   E. Pulmonary arteriovenous malformation
   F. Pulmonary vein anomaly
   G. Vascular rings
II. Aortitis or large vessel vasculitis, known or suspected, as indicated by 1 or more of the following
   A. Infectious vasculitis (eg, syphilis, mycotic aneurysm)
   B. Inflammatory vasculitis (eg, Takayasu arteritis, giant cell arteritis, systemic lupus erythematosus)
III. Central vein evaluation needed, as indicated by 1 or more of the following
   A. Facial or upper extremity swelling
   B. Potential access site for hemodialysis
   C. Superior vena cava syndrome
IV. Chronic thromboembolic pulmonary hypertension, suspected
V. Congenital malformation of chest, lungs, mediastinum, or great vessels, known or suspected, when additional imaging required for management
VI. Postoperative or postprocedural evaluation needed to assess luminal patency or complications
VII. Pulmonary embolism evaluation needed, as indicated by ALL of the following
   A. Clinical situation characterized by 1 or more of the following
      1. High clinical probability of pulmonary embolism
      2. Low or moderate clinical probability of pulmonary embolism and abnormal results of D-dimer test
   B. Venous ultrasound testing of legs normal or not available, or not performed due to absence of leg symptoms
VIII. Thoracic aortic aneurysm or dissection evaluation needed, as indicated by 1 or more of the following
   A. Aortic regurgitation murmur
   B. Bicuspid aortic valve, known
   C. Blunt chest trauma, penetrating aortic trauma, or iatrogenic trauma from aortic instrumentation
   D. Chest or upper back pain, unexplained, with acute or subacute onset
   E. Dysphagia
   F. First-degree relative of patient with thoracic aortic aneurysm and/or dissection
   G. Genetic predisposition to aortic disease (eg, Loeys-Dietz syndrome, confirmed genetic mutations known to predispose to aortic aneurysms and aortic dissection, vascular Ehlers-Danlos syndrome, Turner syndrome, Marfan syndrome), with imaging at initial diagnosis and 6 months thereafter
   H. Hoarseness, with suspected recurrent laryngeal nerve palsy

I. Inflammatory vasculitis (eg, giant cell arteritis, Takayasu arteritis, Behcet disease), known or suspected
J. Plain chest x-ray abnormal (eg, widened mediastinum, enlarged aortic knob, tracheal displacement)
K. Postoperative monitoring of thoracic aortic surgery
L. Preoperative planning for thoracic aortic repair (ie, assessment of spinal cord circulation via great anterior radiculomedullary artery)
M. Thoracic aortic aneurysm or dilatation, known or suspected, as indicated by 1 or more of the following
    1. New or worsening signs or symptoms
    2. Surveillance after surgical repair, at 1, 3, 6, and 12 months
    3. Surveillance of stable patient without thoracic aorta imaging in past 6 months
N. Thoracic aortic dissection, known or suspected, as indicated by 1 or more of the following
    1. New or worsening signs or symptoms
    2. Preoperative or preprocedural planning needed
    3. Surveillance after initial dissection or surgical repair, at 1, 3, 6, and 12 months post dissection
    4. Surveillance of stable patient without thoracic aorta imaging in past year
O. Transthoracic echocardiogram findings abnormal

IX. Trauma of chest, known or suspected (eg, massive hemoptysis, high-speed motor vehicle accident)
X. Repeat evaluation of specific area or structure with same imaging modality, as indicated by 1 or more of the following
    A. Change in clinical status (eg, worsening symptoms or new associated symptoms)
    B. Need for interval reassessment that may impact treatment plan
    C. Need for re-imaging either prior to or after performance of invasive procedure

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CT, cervical spine; without contrast material

CPT Code 72125

Cervical spine CT scan may be indicated for 1 or more of the following (1) :

I. Anatomy or structural defect evaluation needed, as indicated by 1 or more of the following
    A. Aneurysmal bone cyst
    B. Chondrosarcoma
    C. Chordoma
    D. Hemangioma
    E. Multiple myeloma coexistent
    F. Nocturnal spine pain
    G. Osteochondroma
    H. Osteoid osteoma
    I. Paget disease coexistent, with neck pain, abnormal bone scan, or elevated alkaline phosphatase
    J. Painful scoliosis
    K. Plain x-rays abnormal (eg, Klippel-Feil anomaly of fused vertebrae)

II. Cancer or neoplasm evaluation or staging needed, as indicated by 1 or more of the following
    A. Anatomic guidance needed during percutaneous needle biopsy of lesion
    B. Imaging evaluation needed, as indicated by ALL of the following:
        1. Localized midline cervical spine pain and 1 or more of the following:
            a. Bone scan positive
            b. Myelopathy signs or symptoms (eg, motor weakness)
            c. Pain occurs mainly at night.
            d. Personal history or concurrent diagnosis of malignancy
            e. Spine pain persistent in patient older than 50 years
            f. Weakness, rapidly progressing
            g. Unexplained weight loss
        2. MRI contraindicated or not available
III. Infection, known or suspected, as indicated by 1 or more of the following
    A. Abscess of soft tissue or muscle and 1 or more of the following:
        1. Monitoring treatment of abscess
        2. Performed for planning of biopsy or surgical treatment
    B. Osteomyelitis, suspected, as indicated by ALL of the following:
        1. Osteomyelitis, suspected, as indicated by 1 or more of the following :
            a. Bone pain (localized) associated with chills or fever
            b. Cellulitis that responds poorly to antibiotics
            c. Focal lesion seen on bone scan
            d. Plain x-ray findings suspicious for osteomyelitis
            e. Sinus tract infection from ulcer, suspected
        2. Need for CT scan, as indicated by 1 or more of the following :
            a. Bone sequestration, suspected
            b. Gas in bone, suspected
            c. Localization of metallic and nonmetallic foreign body
            d. MRI contraindicated or not available, or results indeterminate
    C. Postoperative assessment needed due to high clinical suspicion of localized infection (eg, fever, leukocytosis, elevated erythrocyte sedimentation rate)
IV. Pain localized to neck or radicular in nature, subacute or chronic, as indicated by ALL of the following:
    A. Failure to improve after 6 or more weeks of nonoperative treatment, as indicated by 1 or more of the following :
        1. Analgesics and NSAIDs
        2. Exercise
        3. Modification of activity that exacerbates or produces symptoms
        4. Physical therapy
    B. Patient being considered for invasive treatment (eg, epidural steroids, surgery)
    C. Significant interference with daily function
    D. MRI contraindicated or not available
V. Postoperative evaluation of cervical spine, as indicated by 1 or more of the following :
    A. Dynamic x-ray findings inconclusive for presence of spinal motion suggestive of nonunion (pseudarthrosis)
    B. Evaluation of correct positioning of metal implants (eg, pedicle screws)
    C. Multilevel fusion

VI. Spinal cord compression or stenosis of cervical spine, suspected, as indicated by ALL of the following :
    A. Progressive or disabling signs or symptoms, as indicated by 1 or more of the following:
        1. Hyperactive reflexes
        2. Muscle weakness
        3. Sensory loss in cervical dermatome distribution
        4. Spasticity
    B. Patient being considered for operative treatment
    C. Cervical MRI or CT myelogram contraindicated or not available, or results indeterminate
VII. Spondylotic myelopathy, suspected, as indicated by ALL of the following :
    A. Signs or symptoms of myelopathy, as indicated by 1 or more of the following:
        1. Babinski sign positive
        2. Fecal incontinence
        3. Gait abnormality (eg, spastic or ataxic)
        4. Hoffman sign positive (ie, thumb flexion and adduction upon flexion of long finger terminal phalanx)
        5. Hyperreflexia or clonus
        6. Motor weakness of upper or lower extremity (eg, bilateral or involving multiple nerve roots)
        7. Sensory or motor deficits, significant or progressive
        8. Spasticity
        9. Urinary urgency, frequency, retention, or overflow incontinence
    B. MRI contraindicated or not available
VIII. Stereotactic spine radiotherapy treatment planning
IX. Subluxation or odontoid erosion, suspected (eg, from rheumatoid arthritis), and negative findings on plain x-rays
X. Torticollis, as indicated by 1 or more of the following:
    A. Nontraumatic etiology in child younger than 18 years
    B. Posttraumatic etiology, when plain-film x-ray results unremarkable or inconclusive
XI. Trauma or fracture of cervical spine, known or suspected, as indicated by 1 or more of the following
    A. Cervical spine clearance after trauma
    B. Pathology at cervicothoracic junction, suspected (shoulder bones may obscure C7-T1 traumatic injuries on plain x-rays)
    C. Preoperative planning for mechanically unstable spine
    D. Trauma involving hyperextension in patient with underlying spinal disease, as indicated by 1 or more of the following:
        1. Ankylosing spondylitis
        2. Degenerative spondyloarthropathy
        3. Diffuse idiopathic systemic hyperostosis
        4. Rheumatoid arthritis
XII. Repeat evaluation of specific area or structure with same imaging modality, as indicated by 1 or more of the following:
    A. Change in clinical status (eg, worsening symptoms or new associated symptoms)
    B. Need for interval reassessment that may impact treatment plan
    C. Need for re-imaging either prior to or after performance of invasive procedure

MRI, spinal canal and contents, cervical; without contrast material

CPT Code 72141

Cervical spine MRI may be indicated for 1 or more of the following :

I. Cancer or neoplasm evaluation or staging needed, as indicated by 1 or more of the following :
   A. Localized neck pain and 1 or more of the following:
      1. Bone scan positive
      2. Pain occurs mainly at night.
      3. Persistent pain in patient older than 50 years
      4. Personal history or concurrent diagnosis of malignancy
      5. Weakness, rapidly progressing
      6. Weight loss, unexplained
   B. Myelopathy signs or symptoms (eg, motor weakness, bowel or bladder dysfunction)
   C. Post-treatment monitoring of spinal metastasis

II. Chiari malformation, suspected, as indicated by 1 or more of the following :
   A. Babinski sign positive
   B. Gait disturbance
   C. Hyperreflexia
   D. Lower cranial nerve dysfunction such as vocal cord paralysis
   E. Nystagmus
   F. Severe paroxysmal headache or posterior cervical pain with Valsalva maneuvers (eg, laughing, sneezing, coughing)

III. Infection, known or suspected (eg, vertebral osteomyelitis, disk space infection, epidural abscess), as indicated by ALL of the following :
   A. Localized midline back pain
   B. Risk factors for spinal infection, as indicated by 1 or more of the following:
      1. Bone scan or plain x-ray suggestive for infection
      2. Erythrocyte sedimentation rate elevated
      3. Fever
      4. History of intravenous drug abuse, other source of infection, or recent invasive procedure
      5. Immunosuppression
      6. Recent history of spinal surgery
      7. Tuberculosis, concurrent or suspected

IV. Inflammatory or demyelinating process, suspected (eg, clinically isolated syndrome, multiple sclerosis, other demyelinating disease), as indicated by 1 or more of the following
   A. Multiple sclerosis, suspected, as indicated by 1 or more of the following:
      1. Ascending numbness or tingling (eg, from foot to trunk)
      2. Brown-Sequard syndrome
      3. Conditions mimicking multiple sclerosis (eg, Sjogren syndrome, systemic lupus erythematosus, antiphospholipid syndrome) cannot yet be excluded.
      4. MRI of brain nondiagnostic for multiple sclerosis
      5. Signs or symptoms of myelopathy or myelitis

B. Transverse myelitis in spinal cord, suspected (idiopathic or in conjunction with multiple sclerosis), as indicated by 1 or more of the following :
    1. Bilateral signs or symptoms of involvement of appropriate level of spinal cord
    2. Clearly defined sensory level
    3. Sudden onset of sensory, motor, and autonomic dysfunction attributable to appropriate level of spinal cord

V. Klippel-Feil syndrome, suspected (ie, fusion of 2 cervical vertebrae)

VI. Pain localized to neck or radicular in nature, subacute or chronic, as indicated by ALL of the following
    A. Failure to improve after 6 or more weeks of nonoperative treatment, as indicated by 1 or more of the following :
        1. Analgesics and NSAIDs
        2. Exercise
        3. Modification of activity that exacerbates or produces symptoms
        4. Physical therapy
    B. Patient being considered for invasive treatment (eg, epidural steroids, surgery)
    C. Significant interference with daily function

VII. Postoperative spinal complications, known or suspected, as indicated by 1 or more of the following
    A. Postoperative hemorrhage or hematoma
    B. Significant new neurologic findings
    C. Significant new pain symptoms

VIII. Rheumatoid arthritis in cervical spine with suspected instability or cord compression, as indicated by 1 or more of the following
    A. Atlantoaxial subluxation or impaction on plain x-ray
    B. Evidence of myelopathy or progressive neurologic deficit
    C. Subluxation of first and second cervical vertebrae (C1 and C2)

IX. Scoliosis with Neurofibromatosis

X. Spinal cord compression or myelopathy, suspected, as indicated by 1 or more of the following
    A. Babinski sign positive
    B. Fecal incontinence
    C. Gait abnormality (eg, spastic or ataxic)
    D. Hoffman sign positive (ie, thumb flexion and adduction upon flexion of long finger terminal phalanx)
    E. Hyperreflexia or clonus
    F. Motor weakness of upper extremity (eg, bilateral or involving multiple nerve roots)
    G. Sensory or motor deficits, significant or progressive
    H. Spasticity
    I. Urinary urgency, frequency, retention, or overflow incontinence

XI. Spinal stenosis of cervical spine, suspected, as indicated by ALL of the following
    A. Patient being considered for invasive treatment
    B. Progressive or disabling symptoms of cervical spine stenosis, as indicated by 1 or more of the following:
        1. Hyperactive reflexes
        2. Muscle weakness
        3. Sensory loss
        4. Spasticity

XII. Stereotactic spine radiotherapy treatment planning

XIII. Syringomyelia in cervical spine, suspected, as indicated by 1 or more of the following:
    A. Upper limb sensory loss in cape-like distribution
    B. Weakness, muscle wasting, and sensory loss beginning in intrinsic muscles of hand
XIV. Torticollis, as indicated by ALL of the following
    A. Age younger than 18 years
    B. Initial CT scan normal or inconclusive
    C. Nontraumatic etiology
XV. Trauma or fracture of cervical spine, known or suspected, as indicated by 1 or more of the following
    A. Epidural hematoma, suspected
    B. High clinical suspicion of acute spinal injury, as indicated by ALL of the following:
        1. Negative or indeterminate cervical spine x-ray or CT scan results
        2. Symptoms, as indicated by 1 or more of the following:
            a. Midline cervical tenderness
            b. Paresthesias of extremities
    C. Ligamentous injury, suspected
    D. Neurologic symptoms associated with traumatic mechanism of injury, as indicated by 1 or more of the following:
        1. Ejection from motorcycle
        2. Fall from height greater than 10 feet (3.1 meters)
        3. High-speed motor vehicle accident (greater than 50 mph (80.5 kph))
        4. Intoxicated state
        5. Minimal trauma in osteoporotic patient with suspected fragility fracture
        6. Motor vehicle accident, with acute hyperflexion of spine over seat belt
    E. Patient obtunded or with altered mental status
    F. Plain x-ray or CT nondiagnostic or shows abnormal spine motion or burst fracture
    G. Significant head injury
    H. Traumatic disk herniation, suspected
XVI. Tuberculosis of spine, known or suspected, as indicated by 1 or more of the following
    A. Diagnostic evaluation of suspected spinal tuberculosis
    B. Preparation for surgical management
XVII. Repeat evaluation of specific area or structure with same imaging modality, as indicated by 1 or more of the following:
    A. Change in clinical status (eg, worsening symptoms or new associated symptoms)
    B. Need for interval reassessment that may impact treatment plan
    C. Need for re-imaging either prior to or after performance of invasive procedure

MRI, spinal canal and contents, lumbar; without contrast material

CPT Code 72148

Lumbar spine MRI may be indicated for 1 or more of the following:

I. Ankylosing spondylitis or other seronegative spondyloarthritis, suspected, as indicated by ALL of the following
   A. Back pain improving with exercise
   B. Back pain of insidious onset that has persisted for 3 months or longer
   C. Early-morning stiffness lasting longer than 30 minutes
   D. Patient evaluated by rheumatologist
   E. Plain x-ray results nondiagnostic
II. Cancer or neoplasm evaluation or staging needed, as indicated by 1 or more of the following
   A. Localized lumbar back pain and 1 or more of the following:
      1. Bone scan positive
      2. Pain occurs mainly at night.
      3. Persistent back pain in patient older than 50 years
      4. Personal history or concurrent diagnosis of malignancy
      5. Weakness, rapidly progressing
      6. Weight loss, unexplained
   B. Myelopathy signs or symptoms (eg, motor weakness, bowel or bladder dysfunction)
   C. Post-treatment monitoring of spinal metastasis
III. Congenital spinal conditions, suspected, as indicated by 1 or more of the following
   A. Anterior sacral meningocele
   B. Caudal regression syndrome
   C. Diastematomyelia (ie, split cord malformation)
   D. Dorsal dermal sinus
   E. Hydromyelia
   F. Intradural lipoma
   G. Myelocele
   H. Myelomeningocele
   I. Split notochord syndrome
   J. Tight filum terminale
IV. Infection, known or suspected (eg, vertebral osteomyelitis, disk space infection, epidural abscess), as indicated by ALL of the following :
   A. Localized midline back pain
   B. Risk factors for spinal infection, as indicated by 1 or more of the following:
      1. Bone scan or plain x-ray suggestive for infection
      2. Erythrocyte sedimentation rate elevated
      3. Fever
      4. History of intravenous drug abuse, other source of infection, or recent invasive procedure
      5. Immunosuppression

6. Recent history of spinal surgery
7. Tuberculosis, concurrent or suspected

V. Inflammatory or demyelinating process, suspected (eg, clinically isolated syndrome, multiple sclerosis, other demyelinating disease), as indicated by 1 or more of the following
   A. Multiple sclerosis, suspected, as indicated by 1 or more of the following:
      1. Ascending numbness or tingling (eg, from foot to trunk)
      2. Brown-Sequard syndrome
      3. Conditions mimicking multiple sclerosis (eg, Sjogren syndrome, systemic lupus erythematosus, antiphospholipid syndrome) cannot yet be excluded.
      4. MRI of brain nondiagnostic for multiple sclerosis
      5. Signs or symptoms of myelopathy or myelitis
   B. Transverse myelitis in spinal cord, suspected (idiopathic or in conjunction with multiple sclerosis), as indicated by 1 or more of the following :
      1. Bilateral signs or symptoms of involvement of appropriate level of spinal cord
      2. Clearly defined sensory level
      3. Sudden onset of sensory, motor, and autonomic dysfunction attributable to appropriate level of spinal cord

VI. Pain localized to low back or radicular in nature, subacute or chronic, as indicated by ALL of the following
   A. Failure to improve after 6 or more weeks of nonoperative treatment, as indicated by 1 or more of the following :
      1. Analgesics and NSAIDs
      2. Exercise
      3. Modification of activity that exacerbates or produces symptoms
      4. Physical therapy
   B. Patient being considered for invasive treatment (eg, epidural steroids, surgery)
   C. Significant interference with daily function

VII. Postoperative spinal complications, known or suspected, as indicated by 1 or more of the following
   A. Differentiating recurrent disk herniation from epidural fibrosis, soft tissue inflammation, facet joint inflammation, or bone marrow edema
   B. Postoperative hemorrhage or hematoma
   C. Pseudomeningocele
   D. Spondylodiscitis
   E. Sterile arachnoiditis

VIII. Scoliosis with Neurofibromatosis

IX. Spinal cord compression, myelopathy, or cauda equina syndrome, suspected, as indicated by 1 or more of the following
   A. Fecal incontinence
   B. Gait abnormality
   C. Significant or progressive sensory or motor deficits (including saddle anesthesia)
   D. Spasticity
   E. Urinary urgency, frequency, retention, or overflow incontinence

X. Spinal stenosis of lumbar spine, suspected, as indicated by ALL of the following
   A. Neurogenic claudication with progressive or disabling symptoms, as indicated by 1 or more of the following :

1. Back, leg, or buttock pain worsens with prolonged standing and activities requiring lumbar extension.
2. Bilateral leg or buttock pain with prolonged walking that is relieved with sitting or leaning forward
3. Leg weakness
4. Wide-based gait or abnormal Romberg test

B. Patient being considered for invasive treatment

XI. Spondylolysis, known or suspected by radiologic evidence (eg, by plain x-ray, bone scan, CT scan), with or without spondylolisthesis, and 1 or more of the following
   A. Focal neurologic findings
   B. Significant pain
   C. Urinary retention or incontinence

XII. Stereotactic spine radiotherapy treatment planning

XIII. Syringomyelia in lumbar spine, suspected, as indicated by 1 or more of the following
   A. Muscle wasting in appropriate lumbar spine dermatomes
   B. Sensory loss in appropriate lumbar spine dermatomes
   C. Weakness in appropriate lumbar spine dermatomes

XIV. Tethered cord, suspected, as indicated by 1 or more of the following
   A. Anorectal malformation
   B. Cutaneous manifestations of occult spina bifida (eg, nevus, lipoma, tufts of hair, hemangioma, dimple overlying spine, asymmetric gluteal cleft, dermal sinus tract)
   C. Gait abnormality or difficulty
   D. Urinary dribbling or lack of bladder control
   E. Urodynamic tests abnormal

XV. Trauma or fracture of lumbar spine, known or suspected, as indicated by 1 or more of the following
   A. Myelopathy
   B. Neurologic findings that correspond to vertebral level above level of injury seen on plain x-ray or CT scan
   C. Plain x-ray or CT scan results nondiagnostic
   D. Progressive neurologic deficit
   E. Radiculopathy

XVI. Tuberculosis of spine, known or suspected, as indicated by 1 or more of the following
   A. Diagnostic evaluation of suspected spinal tuberculosis
   B. Preparation for surgical management

XVII. Repeat evaluation of specific area or structure with same imaging modality, as indicated by 1 or more of the following:
   A. Change in clinical status (eg, worsening symptoms or new associated symptoms)
   B. Need for interval reassessment that may impact treatment plan
   C. Need for re-imaging either prior to or after performance of invasive procedure

MRI, any joint of lower extremity; without contrast material

CPT Code 73721

Foot and foot joints MRI may be indicated for 1 or more of the following:

I. Bone anatomy or structural defect evaluation needed, as indicated by 1 or more of the following
   A. Arthrofibrosis
   B. Articular cartilage defect, known or suspected
   C. Bone abnormality on plain x-ray or CT scan
   D. Bone scan demonstrating well-localized increased uptake
   E. Metatarsal pathology, suspected, when imaging is likely to assist in diagnosis or treatment
   F. Osteochondral lesion, suspected, with normal or indeterminate findings on plain x-ray
   G. Osteonecrosis or osteochondritis dissecans, suspected (ie, focal radiolucency or sclerosis on plain x-ray in patient at risk)
   H. Tarsal coalition, known or suspected, as indicated by ALL of the following:
      1. Diminished range of motion of subtalar joint
      2. Painful rigid flatfoot, present with and without weight-bearing
      3. Weight-bearing plain x-ray examination revealing 1 or more of the following:
         a. "Anteater" nose sign
         b. Beaking of anterior talus
         c. Calcaneonavicular coalition or talocalcaneal coalition
      4. CT scan contraindicated or not available, or results indeterminate

II. Cancer or neoplasm evaluation or staging needed, as indicated by 1 or more of the following:
   A. Bone neoplasm (benign or malignant), as indicated by 1 or more of the following :
      1. Abnormal finding on plain x-ray or bone scan
      2. Chondrosarcoma and 1 or more of the following:
         a. Initial staging
         b. Monitoring response after treatment completed
         c. Post-treatment surveillance for local tumor recurrence; intervals include 1 or more of the following:
            I. High-grade lesions: every 3 to 6 months for first 5 years, then annually thereafter [A]
            II. Low-grade lesions: every 6 to 12 months for 2 years, then annually thereafter
      3. Current diagnosis or history of cancer located elsewhere and 1 or more of the following:
         a. Plain x-ray or bone scan findings indeterminate
         b. Unexplained localized bony signs and symptoms (eg, pain)
      4. Ewing sarcoma and 1 or more of the following:
         a. Initial staging
         b. Monitoring response after treatment completed
         c. Post-treatment surveillance for local tumor recurrence; intervals include 1 or more of the following:
            I. Every 2 to 3 months for first 2 years, then decreasing frequency through year 5
            II. Annually after 5 years
      5. Osteosarcoma and 1 or more of the following:

a. Initial staging
b. Monitoring response after chemotherapy or radiation therapy
c. Post-treatment surveillance for local tumor recurrence; intervals include 1 or more of the following:
I. Every 3 months for 2 years
II. Every 4 months for year 3
III. Every 6 months for years 4 and 5
IV. Annually after 5 years

6. Palpable bony abnormality, with normal findings on plain x-ray

B. Morton neuroma (interdigital neuroma), as indicated by ALL of the following :
1. Failure of nonoperative care (eg, orthotics, elimination of offending shoes, local steroid injection)
2. Morton neuroma signs or symptoms (eg, numbness or pain in space between toes)
3. Surgical setting, as indicated by 1 or more of the following:
a. Surgical procedure being considered
b. Surgical procedure performed and recurrence suspected

C. Sarcoma, soft tissue, and 1 or more of the following :
1. Initial staging
2. Within 3 months after treatment completed
3. Abnormal physical findings after treatment completed
4. Annual post-treatment surveillance up to 10 years,if primary site cannot be adequately followed by serial physical examinations

D. Soft tissue mass, as indicated by 1 or more of the following :
1. Causing pain
2. Concern for effect on adjacent anatomic structures
3. Deep or large mass
4. Mass that crosses anatomic boundaries
5. Preoperative planning for biopsy or surgical treatment
6. Progressively enlarging
7. Vascular lesion that is expanding or causing change in color of overlying skin

III. Charcot joint (neuropathic osteodystrophy), known or suspected, as indicated by ALL of the following
A. Imaging results will impact treatment plan (eg, identify underlying infection).
B. Plain x-ray results indeterminate

IV. Infection, known or suspected, as indicated by 1 or more of the following
A. Osteomyelitis, suspected, as indicated by 1 or more of the following :
1. Abscess of residual limb, suspected, following lower extremity amputation for osteomyelitis
2. Bone pain (localized) associated with chills or fever
3. Bone pain (persistent) in patient with diabetes or severe peripheral vascular disease
4. Cellulitis that responds poorly to antibiotics
5. Focal lesion seen on bone scan
6. Sinus tract infection from ulcer, suspected
7. Ulcer of lower extremity, persistent or worsening, in patient with diabetes or severe peripheral vascular disease

B. Severe cellulitis suspicious for early necrotizing fasciitis
C. Soft tissue muscle abscess, when performed for planning of biopsy or surgical treatment

V. Pain localized to foot, as indicated by 1 or more of the following

A. Ligament or tendon pathology, suspected
B. Pain unexplained by history and physical examination, with normal findings on plain x-ray
C. Rheumatoid arthritis, for assessment of joint involvement and treatment (eg, intra-articular glucocorticoid injection)
D. Spondyloarthritis with suspected hindfoot or small foot joint involvement, as indicated by 1 or more of the following:
    1. Ankylosing spondylitis
    2. Inflammatory bowel disease-associated arthritis
    3. Psoriatic arthritis
    4. Reactive arthritis (Reiter disease)
    5. Undifferentiated spondyloarthritis
E. Tarsal tunnel syndrome, and suspicion that space-occupying lesions are present

VI. Peripheral neuropathy, and imaging required to assist in diagnosis or treatment
VII. Postoperative assessment following repair of foot cartilage, ligaments, or tendons
VIII. Trauma or fracture, known or suspected, as indicated by 1 or more of the following
A. Fatigue stress fracture (ie, due to abnormal stress on normal bone), suspected, as indicated by ALL of the following :
    1. History of overuse or excessive activity
    2. Localized pain
    3. No evidence of fracture on plain x-ray on 2 occasions, 2 or more weeks apart
    4. Symptoms persist or recur despite rest.
B. Insufficiency stress fracture (ie, due to normal stress on abnormal bone), suspected, as indicated by ALL of the following :
    1. Localized foot pain
    2. No evidence of fracture on plain x-ray on 2 occasions, 2 or more weeks apart
    3. Patient at risk for stress fracture (eg, osteopenia, long-term corticosteroid use, osteomalacia)
C. Tarsometatarsal (Lisfranc) joint pathology, suspected

IX. Repeat evaluation of specific area or structure with same imaging modality, as indicated by 1 or more of the following:
A. Change in clinical status (eg, worsening symptoms or new associated symptoms)
B. Need for interval reassessment that may impact treatment plan
C. Need for re-imaging either prior to or after performance of invasive procedure

X. Knee MRI may be indicated for 1 or more of the following :
XI. Bone anatomy or structural defect evaluation needed, as indicated by 1 or more of the following
A. Articular cartilage defect, known or suspected
B. Bone abnormality on plain x-ray or CT scan
C. Bone scan demonstrating well-localized increased uptake
D. Osteochondral injury, suspected
E. Osteonecrosis or osteochondritis dissecans, suspected, as indicated by 1 or more of the following:
    1. Focal radiolucency seen on plain x-ray
    2. Pain, stiffness, and swelling associated with localized tenderness to pressure
    3. Persistent pain in patient with risk factors for osteonecrosis (eg, sickle cell disease, use of corticosteroids, treatment of acute lymphocytic leukemia)

XII. Cancer or neoplasm evaluation or staging needed, as indicated by 1 or more of the following:
A. Bone neoplasm (benign or malignant), as indicated by 1 or more of the following :

1. Abnormal finding on plain x-ray or bone scan
2. Chondrosarcoma and 1 or more of the following:
    a. Initial staging
    b. Monitoring response after treatment completed
    c. Post-treatment surveillance for local tumor recurrence; intervals include 1 or more of the following:
        I. High-grade lesions: every 3 to 6 months for first 5 years, then annually thereafter [A]
        II. Low-grade lesions: every 6 to 12 months for 2 years, then annually thereafter
3. Current diagnosis or history of cancer located elsewhere and 1 or more of the following:
    a. Plain x-ray or bone scan findings indeterminate
    b. Unexplained localized bony signs and symptoms (eg, pain)
4. Ewing sarcoma and 1 or more of the following:
    a. Initial staging (24)
    b. Monitoring response after treatment completed
    c. Post-treatment surveillance for local tumor recurrence; intervals include 1 or more of the following:
        I. Every 2 to 3 months for first 2 years, then decreasing frequency through year 5
        II. Annually after 5 years
5. Osteosarcoma and 1 or more of the following:
    a. Initial staging (24)
    b. Monitoring response after chemotherapy or radiation therapy
    c. Post-treatment surveillance for local tumor recurrence; intervals include 1 or more of the following:
        I. Every 3 months for 2 years
        II. Every 4 months for year 3
        III. Every 6 months for years 4 and 5
        IV. Annually after 5 years
6. Palpable bony abnormality, with normal findings on plain x-ray

B. Soft tissue neoplasm (benign or malignant), suspected or known

XIII. Joint anatomy or structural defect evaluation needed, as indicated by 1 or more of the following

A. Cystic lesions, as indicated by 1 or more of the following :
    1. Baker cyst, suspected (eg, pain, mass in popliteal space)
    2. Bursa lesions
    3. Ganglion
    4. Meniscal cyst
    5. Subchondral cyst
    6. Synovial cysts (eg, Baker cyst in popliteal space)
B. Loose body in joint space, suspected
C. Meniscal pathology, suspected, as indicated by 1 or more of the following:
    1. Effusion with acute injury or with subsequent episodes of minor injury or vigorous activity
    2. Fractures with high association of meniscal tear (eg, tibial plateau)
    3. Persistent knee pain associated with joint line tenderness to palpation
    4. Positive Apley test
    5. Positive McMurray test
    6. Restricted range of motion, buckling, or locking

D. Synovial pathology, as indicated by 1 or more of the following :
    1. Chronic synovitis secondary to hemarthrosis of hemophilia
    2. Intra-articular venous malformation
    3. Juvenile idiopathic arthritis with knee involvement, for assessment of joint involvement and treatment
    4. Pigmented villonodular synovitis
    5. Seronegative spondyloarthropathies (eg, ankylosing spondylitis, psoriatic arthritis)
    6. Synovial sarcoma

XIV. Ligament, muscle, or tendon injury or tear, known or suspected, as indicated by 1 or more of the following
- A. History of tearing or popping after acute injury
- B. Inability to bear weight after injury
- C. Laxity with valgus or varus stress to knee
- D. Positive anterior or posterior drawer sign (ie, laxity with anterior or posterior stress to knee)
- E. Positive Lachman test
- F. Postoperative assessment needed after ligament repair or reconstruction, as indicated by 1 or more of the following :
    1. Decreased knee range of motion (eg, due to impingement, arthrofibrosis, cystic degeneration of graft)
    2. Graft tear, suspected
    3. Postoperative septic arthritis, suspected
- G. Posttraumatic effusion
- H. Symptoms of instability (ie, giving way or buckling, particularly with sudden stops or rotational and cutting maneuvers)
- I. Tear of extensor mechanism, suspected (eg, quadriceps, patellar tendons)

XV. Osteomyelitis, suspected, as indicated by 1 or more of the following
- A. Abscess of residual limb, suspected, following lower extremity amputation for osteomyelitis
- B. Bone pain (localized) associated with chills or fever
- C. Bone pain (persistent) in patient with diabetes or severe peripheral vascular disease
- D. Cellulitis that responds poorly to antibiotics
- E. Focal lesion seen on bone scan
- F. Sinus tract infection from ulcer, suspected
- G. Ulcer of lower extremity, persistent or worsening, in patient with diabetes or severe peripheral vascular disease

XVI. Pain localized to knee, as indicated by ALL of the following
- A. Knee pain of 6 or more weeks' duration
- B. Pain unexplained by history and physical examination, with normal findings on plain x-ray
- C. Pain unresponsive to appropriate conservative measures (eg, NSAIDs, physical therapy, rest)

XVII. Patella dislocation or chronic patellofemoral instability, as indicated by 1 or more of the following
- A. Following reduction of acute traumatic dislocation
- B. Preoperative evaluation of patient with recurrent dislocation

XVIII. Peripheral neuropathy, and imaging is required to assist in diagnosis or treatment

XIX. Postoperative assessment following repair of knee cartilage, ligaments, or tendons

XX. Trauma or fracture, known or suspected, as indicated by 1 or more of the following
- A. Arcuate fracture of fibular head

B. Occult Salter-Harris fracture (ie, fracture through growth plate), as indicated by ALL of the following:
    1. Patient skeletally immature (eg, has not reached full growth)
    2. Plain x-ray negative or equivocal for physeal fracture of distal femur or proximal tibia
C. Segond fracture (ie, avulsion fracture)
D. Tibial eminence fracture in pediatric or adolescent patient
E. Tibial plateau fracture

XXI. Repeat evaluation of specific area or structure with same imaging modality, as indicated by 1 or more of the following:
A. Change in clinical status (eg, worsening symptoms or new associated symptoms)
B. Need for interval reassessment that may impact treatment plan
C. Need for re-imaging either prior to or after performance of invasive procedure

XXII. Hip MRI may be indicated for 1 or more of the following (1) (2) (3) :

XXIII. Bone anatomy or structural defect evaluation needed, as indicated by 1 or more of the following
A. Articular cartilage defect, known or suspected
B. Bone abnormality on plain x-ray or CT scan
C. Bone scan demonstrating well-localized increased uptake
D. Developmental dysplasia of femoral head, after surgical or closed manipulation and placement in cast
E. Legg-Calve-Perthes disease, known or suspected, for early diagnostic confirmation or preoperative planning
F. Loose body in joint space, suspected
G. Osteoid osteoma, suspected, seen on plain x-ray
H. Osteolysis after total hip arthroplasty, suspected
I. Osteonecrosis or osteochondritis dissecans, suspected, as indicated by 1 or more of the following :
    1. Bone scan demonstrating well-localized increased uptake
    2. Focal radiolucency seen on plain x-ray
    3. Pain, stiffness, and swelling associated with localized tenderness to pressure
    4. Persistent pain in patient with sickle cell disease or chronic corticosteroid usage
J. Prosthetic complications, suspected

XXIV. Cancer or neoplasm evaluation or staging needed, as indicated by 1 or more of the following:
A. Bone neoplasm (benign or malignant), as indicated by 1 or more of the following :
    1. Abnormal finding on plain x-ray or bone scan
    2. Chondrosarcoma and 1 or more of the following:
        a. Initial staging
        b. Monitoring response after treatment completed
        c. Post-treatment surveillance for local tumor recurrence; intervals include 1 or more of the following:
            I. High-grade lesions: every 3 to 6 months for first 5 years, then annually thereafter
            II. Low-grade lesions: every 6 to 12 months for 2 years, then annually thereafter
    3. Current diagnosis or history of cancer located elsewhere and 1 or more of the following:
        a. Plain x-ray or bone scan findings indeterminate
        b. Unexplained localized bony signs and symptoms (eg, pain)
    4. Ewing sarcoma and 1 or more of the following:
        a. Initial staging
        b. Monitoring response after treatment completed

c. Post-treatment surveillance for local tumor recurrence; intervals include 1 or more of the following:
    I. Every 2 to 3 months for first 2 years, then decreasing frequency through year 5
    II. Annually after 5 years
5. Osteosarcoma and 1 or more of the following:
    a. Initial staging
    b. Monitoring response after chemotherapy or radiation therapy
    c. Post-treatment surveillance for local tumor recurrence; intervals include 1 or more of the following:
        I. Every 3 months for 2 years
        II. Every 4 months for year 3
        III. Every 6 months for years 4 and 5
        IV. Annually after 5 years
6. Palpable bony abnormality, with normal findings on plain x-ray

B. Sarcoma, soft tissue, and 1 or more of the following :
1. Initial staging
2. Within 3 months after treatment completed
3. Abnormal physical findings after treatment completed
4. Annual post-treatment surveillance up to 10 years, if primary site cannot be adequately followed by serial physical examinations

C. Soft tissue mass, as indicated by 1 or more of the following :
1. Causing pain
2. Concern for effect on adjacent anatomic structures
3. Deep or large mass
4. Mass that crosses anatomic boundaries
5. Preoperative planning for biopsy or surgical treatment
6. Progressively enlarging
7. Vascular lesion that is expanding or causing change in color of overlying skin

XXV. Infection, known or suspected, as indicated by 1 or more of the following

A. Osteomyelitis, suspected, as indicated by 1 or more of the following:
1. Bone pain (localized) associated with chills or fever
2. Cellulitis that responds poorly to antibiotics
3. Focal lesion seen on bone scan
4. Plain x-ray findings suspicious for osteomyelitis
5. Sinus tract infection from ulcer, suspected

B. Soft tissue or muscle abscess, when performed for planning of biopsy or surgical treatment

XXVI. Ligament, muscle, or tendon injury or tear, or other hip joint pathology, known or suspected, as indicated by 1 or more of the following

A. Acetabulum labral tear, suspected (eg, secondary to femoroacetabular impingement)
B. History of hip dislocation
C. Instability or laxity on physical examination
D. Significant pain or swelling after acute traumatic event, unexplained by bone injury

XXVII. Pain localized to hip, with normal or indeterminate findings on plain x-ray

XXVIII. Peripheral neuropathy, and imaging is required to assist in diagnosis or treatment

XXIX. Trauma or fracture, known or suspected, as indicated by 1 or more of the following

1. Evaluation of complex fracture in preparation for surgical repair
2. Evaluation of fracture displacement or rotation
3. Fatigue stress fracture (ie, due to abnormal stress on normal bone), suspected, as indicated by ALL of the following :
    a. History of overuse or excessive activity
    b. Localized pain
    c. No evidence of fracture on plain x-ray on 2 occasions, 2 or more weeks apart
    d. Symptoms persist or recur despite rest.
4. Insufficiency stress fracture (ie, due to normal stress on abnormal bone), suspected, as indicated by ALL of the following:
    a. Localized hip pain
    b. Patient at risk for stress fracture (eg, osteopenia, long-term corticosteroid therapy)
    c. No evidence of fracture on plain x-ray on 2 occasions, 2 or more weeks apart
    d. Bone scan negative, contraindicated, or nonspecific due to possibility of infectious or inflammatory process

XXX. Repeat evaluation of specific area or structure with same imaging modality, as indicated by 1 or more of the following:

A. Change in clinical status (eg, worsening symptoms or new associated symptoms)
B. Need for interval reassessment that may impact treatment plan
C. Need for re-imaging either prior to or after performance of invasive procedure

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Magnetic resonance (eg, proton) imaging, any joint of upper extremity; without contrast material(s)

CPT Code 73221

Hand MRI may be indicated for 1 or more of the following :

I. Bone anatomy or structural defect evaluation needed, as indicated by 1 or more of the following
    A. Bone abnormality on plain x-ray or CT scan
    B. Bone scan demonstrating well-localized increased uptake
    C. Loose body in joint space, suspected
    D. Osteochondral injury, suspected
    E. Osteonecrosis or osteochondritis dissecans, suspected, as indicated by 1 or more of the following:
        1. Focal radiolucency on plain x-ray
        2. Pain, stiffness, and swelling associated with localized tenderness to pressure
        3. Persistent pain in patient with sickle cell disease or chronic corticosteroid usage
II. Cancer or neoplasm evaluation or staging needed, as indicated by 1 or more of the following
    A. Bone neoplasm (benign or malignant), as indicated by 1 or more of the following:
        1. Abnormal finding on plain x-ray or bone scan
        2. Chondrosarcoma and 1 or more of the following:
            a. Initial staging

b. Monitoring response after treatment completed
c. Post-treatment surveillance for local tumor recurrence; intervals include 1 or more of the following:
I. High-grade lesions: every 3 to 6 months for first 5 years, then annually thereafter
II. Low-grade lesions: every 6 to 12 months for 2 years, then annually thereafter

3. Current diagnosis or history of cancer located elsewhere and 1 or more of the following:
a. Plain x-ray or bone scan findings indeterminate
b. Unexplained localized bony signs and symptoms (eg, pain)

4. Ewing sarcoma and 1 or more of the following:
a. Initial staging
b. Monitoring response after treatment completed
c. Post-treatment surveillance for local tumor recurrence; intervals include 1 or more of the following:
I. Every 2 to 3 months for first 2 years, then decreasing frequency through year 5
II. Annually after 5 years

5. Osteosarcoma and 1 or more of the following:
a. Initial staging
b. Monitoring response after chemotherapy or radiation therapy
c. Post-treatment surveillance for local tumor recurrence; intervals include 1 or more of the following:
I. Every 3 months for 2 years
II. Every 4 months for year 3
III. Every 6 months for years 4 and 5
IV. Annually after 5 years

6. Palpable bony abnormality, with normal findings on plain x-ray

B. Glomus tumor of hand, suspected, as indicated by ALL of the following:
1. Cold sensitivity
2. Pain
3. Point tenderness

C. Sarcoma, soft tissue, and 1 or more of the following :
1. Initial staging
2. Within 3 months after treatment completed
3. Abnormal physical findings after treatment completed
4. Annual post-treatment surveillance up to 10 years, if primary site cannot be adequately followed by serial physical examinations

D. Soft tissue mass and 1 or more of the following:
1. Concern for effect on adjacent anatomic structures
2. Deep or large mass
3. Mass that crosses anatomic boundaries
4. Pain in hand
5. Progressive enlargement
6. Vascular lesion that is expanding or causing change in color of overlying skin

III. Infection, known or suspected, as indicated by 1 or more of the following:
A. Abscess of soft tissue or muscle, known or suspected, and performed for planning of biopsy or surgical treatment

B. Osteomyelitis, suspected, as indicated by 1 or more of the following:
    1. Bone pain (localized) associated with chills or fever
    2. Cellulitis that responds poorly to antibiotics
    3. Focal lesion seen on bone scan
    4. Plain x-ray findings suspicious for osteomyelitis
    5. Sinus tract infection from ulcer, suspected

IV. Inflammatory myopathy, suspected, as indicated by ALL of the following
    A. Appropriate imaging required to guide biopsy
    B. Unexplained symmetric proximal weakness

V. Ligament tear, known or suspected, as indicated by 1 or more of the following
    A. Instability evident on stress views of plain x-ray
    B. Instability on examination
    C. Loss of flexion of distal interphalangeal joint
    D. Persistent pain, swelling, or tenderness
    E. Rupture of ulnar collateral ligament of first metacarpophalangeal joint, suspected (eg, gamekeeper's thumb or skier's thumb)

VI. Macrodactyly (overgrowth of digital soft tissue)

VII. Muscle pathology, known or suspected

VIII. Pain localized to hand, as indicated by 1 or more of the following
    A. Pain unexplained by history and physical examination, with normal or indeterminate findings on plain x-ray or CT scan
    B. Spondyloarthritis with suspected metacarpophalangeal or interphalangeal joint involvement, as indicated by 1 or more of the following :
        1. Ankylosing spondylitis
        2. Inflammatory bowel disease-associated arthritis
        3. Psoriatic arthritis
        4. Reactive arthritis (Reiter disease)
        5. Undifferentiated spondyloarthritis

IX. Peripheral neuropathy, and imaging information necessary for therapeutic management

X. Rheumatoid arthritis at an early stage, suspected, as indicated by ALL of the following
    A. Bilateral involvement of 3 or more joint areas (eg, wrist, metacarpophalangeal, proximal interphalangeal)
    B. MRI requested by rheumatologist or orthopedic surgeon (ie, to determine candidacy for disease-modifying antirheumatic drugs)
    C. Negative rheumatoid factor
    D. Nondiagnostic plain x-ray of hands and wrists
    E. Patient age 18 years or older
    F. Symmetric involvement of joints (ie, corresponding joints on both hands and wrists)
    G. Symptoms present for 6 weeks or more

XI. Repeat evaluation of specific area or structure with same imaging modality, as indicated by 1 or more of the following:
    A. Change in clinical status (eg, worsening symptoms or new associated symptoms)
    B. Need for interval reassessment that may impact treatment plan
    C. Need for re-imaging either prior to or after performance of invasive procedure

XII. Wrist MRI may be indicated for 1 or more of the following :

XIII. Bone anatomy or structural defect evaluation needed, as indicated by 1 or more of the following
    A. Bone abnormality on plain x-ray or CT scan
    B. Bone scan demonstrating well-localized increased uptake
    C. Loose body in joint space, suspected
    D. Osteochondral injury, suspected
    E. Osteonecrosis or osteochondritis dissecans, suspected, as indicated by 1 or more of the following:
        1. Focal radiolucency on plain x-ray
        2. Pain, stiffness, and swelling associated with localized tenderness to pressure
        3. Persistent pain in patient with sickle cell disease or chronic corticosteroid usage

XIV. Cancer or neoplasm evaluation or staging needed, as indicated by 1 or more of the following
    A. Bone neoplasm (benign or malignant), as indicated by 1 or more of the following :
        1. Abnormal finding on plain x-ray or bone scan
        2. Chondrosarcoma and 1 or more of the following:
            a. Initial staging
            b. Monitoring response after treatment completed
            c. Post-treatment surveillance for local tumor recurrence; intervals include 1 or more of the following:
                I. High-grade lesions: every 3 to 6 months for first 5 years, then annually thereafter
                II. Low-grade lesions: every 6 to 12 months for 2 years, then annually thereafter
        3. Current diagnosis or history of cancer located elsewhere and 1 or more of the following:
            a. Plain x-ray or bone scan findings indeterminate
            b. Unexplained localized bony signs and symptoms (eg, pain)
        4. Ewing sarcoma and 1 or more of the following:
            a. Initial staging
            b. Monitoring response after treatment completed
            c. Post-treatment surveillance for local tumor recurrence; intervals include 1 or more of the following:
                I. Every 2 to 3 months for first 2 years, then decreasing frequency through year 5
                II. Annually after 5 years
        5. Osteosarcoma and 1 or more of the following:
            a. Initial staging
            b. Monitoring response after chemotherapy or radiation therapy
            c. Post-treatment surveillance for local tumor recurrence; intervals include 1 or more of the following:
                I. Every 3 months for 2 years
                II. Every 4 months for year 3
                III. Every 6 months for years 4 and 5
                IV. Annually after 5 years
        6. Palpable bony abnormality, with normal findings on plain x-ray
    B. Sarcoma, soft tissue, and 1 or more of the following :
        1. Initial staging
        2. Within 3 months after treatment completed
        3. Abnormal physical findings after treatment completed
        4. Annual post-treatment surveillance up to 10 years, if primary site cannot be adequately followed by serial physical examinations

C. Soft tissue mass, as indicated by 1 or more of the following :
    1. Causing pain
    2. Concern for effect on adjacent anatomic structures
    3. Deep or large mass
    4. Mass that crosses anatomic boundaries
    5. Preoperative planning for biopsy or surgical treatment
    6. Progressively enlarging
    7. Vascular lesion that is expanding or causing change in color of overlying skin

XV. Carpal tunnel syndrome and 1 or more of the following
- A. Coexistent wrist fracture or history of prior wrist fracture
- B. Gouty tophi in wrist joint
- C. Persistent upper extremity symptoms following surgery for carpal tunnel syndrome (ie, suspected transected median nerve)
- D. Space-occupying lesion in wrist, suspected (eg, ganglion, neurofibroma)
- E. Wrist deformity from rheumatoid arthritis

XVI. Infection, known or suspected, as indicated by 1 or more of the following
- A. Osteomyelitis, suspected, as indicated by 1 or more of the following:
    1. Bone pain (localized) associated with chills or fever
    2. Cellulitis that responds poorly to antibiotics
    3. Focal lesion seen on bone scan
    4. Plain x-ray findings suspicious for osteomyelitis
    5. Sinus tract infection from ulcer, suspected
- B. Soft tissue or muscle abscess, when performed for planning of biopsy or surgical treatment

XVII. Pain localized to wrist, as indicated by 1 or more of the following
- A. Compressive neuropathy, suspected (eg, ulnar tunnel syndrome)
- B. Juvenile idiopathic arthritis with wrist involvement, for assessment of joint involvement and treatment (ie, intra-articular glucocorticoid injection)
- C. Ligament tear, suspected, including triangular fibrocartilage complex tear (eg, instability on examination or evident on stress views with plain x-ray)
- D. Persistent wrist pain of unclear etiology, with normal or indeterminate findings on plain x-ray

XVIII. Preoperative planning for partial or total wrist fusion, as indicated by ALL of the following
- A. Cartilage integrity at key locations requires assessment in order to consider partial (vs total) fusion and preserve some joint motion.
- B. Corroborative wrist arthroscopy has been or will be performed.
- C. Degenerative arthritis is present.

XIX. Rheumatoid arthritis at early stage, suspected, as indicated by ALL of the following
- A. Bilateral involvement of 3 or more joint areas (eg, wrist, metacarpophalangeal, proximal interphalangeal)
- B. MRI requested by rheumatologist (ie, to determine candidacy for disease-modifying antirheumatic drugs)
- C. Negative rheumatoid factor
- D. Nondiagnostic plain x-ray of hands and wrists
- E. Patient 18 years or older
- F. Symmetric involvement of joints (ie, corresponding joints on both hands and wrists)
- G. Symptoms present for 6 weeks or more

XX. Trauma or fracture, known or suspected, as indicated by 1 or more of the following
    A. Occult scaphoid fracture or nonunion, suspected, as indicated by ALL of the following :
        1. Pain in anatomic "snuffbox"
        2. Negative or indeterminate findings on plain x-ray or other imaging
    B. Other occult carpal fracture, suspected, with negative or indeterminate plain x-ray results

XXI. Repeat evaluation of specific area or structure with same imaging modality, as indicated by 1 or more of the following:
    A. Change in clinical status (eg, worsening symptoms or new associated symptoms)
    B. Need for interval reassessment that may impact treatment plan
    C. Need for re-imaging either prior to or after performance of invasive procedure

XXII.

Elbow MRI may be indicated for 1 or more of the following:

XXIII. Bone anatomy or structural defect evaluation needed, as indicated by 1 or more of the following
    A. Bone abnormality on plain x-ray or CT scan
    B. Bone scan demonstrating well-localized increased uptake
    C. Loose body in joint space, suspected
    D. Osteochondral injury (stable or unstable), suspected
    E. Osteonecrosis or osteochondritis dissecans, suspected, as indicated by 1 or more of the following :
        1. Focal radiolucency on plain x-ray
        2. Pain, stiffness, and swelling associated with localized tenderness to pressure
        3. Persistent pain in patient with sickle cell disease or chronic corticosteroid usage

XXIV. Cancer or neoplasm evaluation or staging needed, as indicated by 1 or more of the following :
    A. Bone neoplasm (benign or malignant), as indicated by 1 or more of the following :
        1. Abnormal finding on plain x-ray or bone scan
        2. Chondrosarcoma and 1 or more of the following:
            a. Initial staging
            b. Monitoring response after treatment completed
            c. Post-treatment surveillance for local tumor recurrence; intervals include 1 or more of the following:
                I. High-grade lesions: every 3 to 6 months for first 5 years, then annually thereafter
                II. Low-grade lesions: every 6 to 12 months for 2 years, then annually thereafter
        3. Current diagnosis or history of cancer located elsewhere and 1 or more of the following:
            a. Plain x-ray or bone scan findings indeterminate
            b. Unexplained localized bony signs and symptoms (eg, pain)
        4. Ewing sarcoma and 1 or more of the following:
            a. Initial staging
            b. Monitoring response after treatment completed
            c. Post-treatment surveillance for local tumor recurrence; intervals include 1 or more of the following:
                I. Every 2 to 3 months for first 2 years, then decreasing frequency through year 5
                II. Annually after 5 years
        5. Osteosarcoma and 1 or more of the following:
            a. Initial staging
            b. Monitoring response after chemotherapy or radiation therapy

c. Post-treatment surveillance for local tumor recurrence; intervals include 1 or more of the following:
    I. Every 3 months for 2 years
    II. Every 4 months for year 3
    III. Every 6 months for years 4 and 5
    IV. Annually after 5 years
6. Palpable bony abnormality, with normal findings on plain x-ray

B. Sarcoma, soft tissue, and 1 or more of the following :
1. Initial staging
2. Within 3 months after treatment completed
3. Abnormal physical findings after treatment completed
4. Annual post-treatment surveillance up to 10 years, if primary site cannot be adequately followed by serial physical examinations

C. Soft tissue mass, as indicated by 1 or more of the following :
1. Causing pain
2. Concern for effect on adjacent anatomic structures
3. Deep or large mass
4. Mass that crosses anatomic boundaries
5. Preoperative planning for biopsy or surgical treatment
6. Progressively enlarging
7. Vascular lesion that is expanding or causing change in color of overlying skin

XXV. Hemophilic arthropathy of elbow, known or suspected, for diagnostic confirmation or preoperative planning

XXVI. Implant in place, and need for assessment of loosening or other pathology

XXVII. Infection, known or suspected, as indicated by 1 or more of the following

A. Osteomyelitis, suspected, as indicated by 1 or more of the following :
1. Bone pain (localized) associated with chills or fever
2. Cellulitis that responds poorly to antibiotics
3. Focal lesion seen on bone scan
4. Plain x-ray findings suspicious for osteomyelitis
5. Sinus tract infection from ulcer, suspected

B. Soft tissue or muscle abscess, when performed for planning of biopsy or surgical treatment (37)

XXVIII. Inflammatory myopathy, suspected, as indicated by ALL of the following

A. Appropriate imaging required to guide biopsy
B. Unexplained symmetric proximal weakness

XXIX. Ligament, muscle, or tendon injury, known or suspected, as indicated by 1 or more of the following

A. History of elbow dislocation
B. Instability or laxity on physical examination
C. Lateral epicondylitis (tennis elbow), known or suspected
D. Medial ligamentous complex tear (ulnar collateral ligament), including post-reconstruction assessment
E. Muscle pathology, known or suspected
F. Postoperative assessment after repair or reconstruction
G. Significant pain or swelling after acute traumatic event, unexplained by bone injury (eg, suspected elbow impingement syndrome)

H. Significant weakness during elbow flexion, extension, pronation, or supination

XXX. Pain localized to elbow, as indicated by 1 or more of the following

A. Chronic elbow pain unresponsive to nonoperative measures (eg, rest, NSAIDs, physical therapy) and 1 or more of the following:

1. Chronic epicondylitis, and ultrasound results negative or indeterminate
2. Elbow pain of unclear etiology, with normal or indeterminate findings on plain x-ray

B. Juvenile idiopathic arthritis with elbow involvement, for assessment of joint involvement and treatment (ie, intra-articular glucocorticoid injection)

XXXI. Synovial pathology evaluation needed for patient with rheumatoid arthritis, pigmented villonodular synovitis, or idiopathic synovial osteochondromatosis

XXXII. Trauma or fracture, known or suspected, as indicated by 1 or more of the following

A. Cartilaginous fracture in skeletally immature child, suspected
B. Occult fracture, stress fracture, or impaction injury, suspected

XXXIII. Ulnar nerve entrapment, as indicated by 1 or more of the following

A. Coexistent elbow fracture or history of elbow fracture (eg, supracondylar fracture)
B. Electrodiagnostic testing is equivocal or cannot be performed for technical or anatomic reasons.
C. Space-occupying lesion in elbow, suspected
D. Ulnar neuropathy not adequately localized by diagnostic testing, and surgery planned

XXXIV. Repeat evaluation of specific area or structure with same imaging modality, as indicated by 1 or more of the following:

A. Change in clinical status (eg, worsening symptoms or new associated symptoms)
B. Need for interval reassessment that may impact treatment plan
C. Need for re-imaging either prior to or after performance of invasive procedure

XXXV.

Shoulder MRI may be indicated for 1 or more of the following :

XXXVI. Anatomic guidance during contrast injection prior to MR arthrography

XXXVII. Bone anatomy or structural defect evaluation needed, as indicated by 1 or more of the following

A. Bone abnormality on plain x-ray or CT scan
B. Bone scan demonstrating well-localized increased uptake
C. Loose body in joint space, suspected
D. Osteochondral injury, suspected
E. Osteonecrosis or osteochondritis dissecans, suspected, as indicated by 1 or more of the following:

1. Focal radiolucency on plain x-ray
2. Pain, stiffness, and swelling associated with localized tenderness to pressure
3. Persistent pain in patient with sickle cell disease or chronic corticosteroid usage

XXXVIII. Cancer or neoplasm evaluation or staging needed for 1 or more of the following

A. Bone neoplasm (benign or malignant), as indicated by 1 or more of the following:

1. Abnormal finding on plain x-ray or bone scan (24)
2. Chondrosarcoma and 1 or more of the following:

a. Initial staging
b. Monitoring response after treatment completed
c. Post-treatment surveillance for local tumor recurrence; intervals include 1 or more of the following:

I. High-grade lesions: every 3 to 6 months for first 5 years, then annually thereafter [A]
II. Low-grade lesions: every 6 to 12 months for 2 years, then annually thereafter

3. Current diagnosis or history of cancer located elsewhere and 1 or more of the following:
    a. Plain x-ray or bone scan findings indeterminate
    b. Unexplained localized bony signs and symptoms (eg, pain)
4. Ewing sarcoma and 1 or more of the following:
    a. Initial staging
    b. Monitoring response after treatment completed
    c. Post-treatment surveillance for local tumor recurrence; intervals include 1 or more of the following:
        I. Every 2 to 3 months for first 2 years, then decreasing frequency through year 5
        II. Annually after 5 years
5. Osteosarcoma and 1 or more of the following:
    a. Initial staging
    b. Monitoring response after chemotherapy or radiation therapy
    c. Post-treatment surveillance for local tumor recurrence; intervals include 1 or more of the following:
        I. Every 3 months for 2 years
        II. Every 4 months for year 3
        III. Every 6 months for years 4 and 5
        IV. Annually after 5 years
6. Palpable bony abnormality, with normal findings on plain x-ray

B. Sarcoma, soft tissue, and 1 or more of the following :
    1. Initial staging
    2. Within 3 months after treatment completed
    3. Abnormal physical findings after treatment completed
    4. Annual post-treatment surveillance up to 10 years, if primary site cannot be adequately followed by serial physical examinations

C. Soft tissue mass, as indicated by 1 or more of the following :
    1. Causing pain
    2. Concern for effect on adjacent anatomic structures
    3. Deep or large mass
    4. Mass that crosses anatomic boundaries
    5. Preoperative planning for biopsy or surgical treatment
    6. Progressively enlarging
    7. Vascular lesion that is expanding or causing change in color of overlying skin

XXXIX. Infection, known or suspected, as indicated by 1 or more of the following:
    A. Osteomyelitis, suspected, as indicated by 1 or more of the following :
    B. Bone pain (localized) associated with chills or fever
    C. Cellulitis that responds poorly to antibiotics
    D. Focal lesion seen on bone scan
    E. Plain x-ray findings suspicious for osteomyelitis
    F. Sinus tract infection from ulcer, suspected
    G. Soft tissue or muscle abscess, when performed for planning of biopsy or surgical treatment

XL. Inflammatory myopathy, suspected, as indicated by ALL of the following
    A. Appropriate imaging required to guide biopsy
    B. Unexplained symmetric proximal weakness

XLI. Ligament, muscle, or tendon injury or tear, or other shoulder joint pathology, known or suspected, as indicated by 1 or more of the following
    A. Anterior or posterior shoulder instability (eg, Bankart lesion)
    B. Biceps tendon pathology, suspected, as indicated by 1 or more of the following:
        1. Instability or weakness suggesting tendon tear
        2. Pain that is unresponsive to NSAIDs and physical therapy
    C. Deltoid pathology, suspected (eg, contracture, deltoid tear)
    D. Glenoid labral tear, suspected (eg, SLAP lesion)
    E. Muscle pathology, known or suspected
    F. Rotator cuff tear, suspected, as indicated by 1 or more of the following:
        1. Acute onset of shoulder pain following shoulder trauma
        2. Recurrent rotator cuff tear, suspected, after operative repair, unless implanted metallic hardware would produce artifact
        3. Rotator cuff tear suggested by difference between active and passive range of motion
        4. Weakness with strength testing of rotator cuff on physical examination
    G. Shoulder impingement, suspected, as indicated by ALL of the following:
        1. Clinical examination findings consistent with shoulder impingement (eg, positive Neer test, positive Hawkins test, painful arc)
        2. No response to 6 or more weeks of nonoperative treatment (eg, NSAIDs, corticosteroid injections, physical therapy)

XLII. Pain localized to shoulder, as indicated by 1 or more of the following
    A. Chronic shoulder pain of unclear etiology, as indicated by ALL of the following :
        1. Normal findings on plain x-ray
        2. Pain not improving after 6 or more weeks of nonoperative therapy (eg, rest, NSAIDs, physical therapy)
    B. Shoulder pain following significant trauma (79)

XLIII. Peripheral neuropathy, and imaging required to assist in diagnosis or treatment

XLIV. Postoperative assessment of shoulder, when results likely to affect further management

XLV. Soft tissue mass, known or suspected, for diagnostic confirmation or characterization as solid or cystic

XLVI. Repeat evaluation of specific area or structure with same imaging modality, as indicated by 1 or more of the following:
    A. Change in clinical status (eg, worsening symptoms or new associated symptoms)
    B. Need for interval reassessment that may impact treatment plan
    C. Need for re-imaging either prior to or after performance of invasive procedure

Catheter placement in coronary artery(s) for coronary angiography, including intra-procedural injection(s) for coronary angiography, imaging supervision and interpretation

CPT Code 93454

Catheter placement in coronary artery(s) for coronary angiography, including intraprocedural injection(s) for coronary angiography, imaging supervision and interpretation; with left heart catheterization including intraprocedural injection(s) for left ventriculography, when performed

CPT Code 93458

Catheter placement in coronary artery(s) for coronary angiography, including intraprocedural injection(s) for coronary angiography, imaging supervision and interpretation; with left heart catheterization including intraprocedural injection(s) for left ventriculography, when performed, catheter placement(s) in bypass graft(s) (internal mammary, free arterial, venous grafts) with bypass graft angiography

CPT Code 93459

Catheter placement in coronary artery(s) for coronary angiography, including intraprocedural injection(s) for coronary angiography, imaging supervision and interpretation; with right and left heart catheterization including intraprocedural injection(s) for left ventriculography, when performed

CPT Code 93460

Cardiac catheterization and angiography may be indicated for 1 or more of the following:

I. Cardiac transplant patients, for surveillance of cardiac allograft vasculopathy and rejection following transplant

II. Congenital heart disease, known or suspected, as indicated by 1 or more of the following
    A. Direct measurement of pressure gradients or oxygen saturations needed (eg, for intracardiac shunt, valvular heart disease)
    B. Invasive procedure planned, and preoperative or postoperative catheterization or angiographic imaging needed (eg, for pressure and gradient measurements)
    C. Noninvasive imaging is nondiagnostic or discordant with physical examination findings.
III. Coronary artery disease, known or suspected, as indicated by 1 or more of the following
    A. Angina at rest or crescendo angina (ie, unstable angina), and noninvasive stress imaging is unavailable, contraindicated, or nondiagnostic
    B. Angina recurrent within 9 months of percutaneous coronary intervention
    C. Evidence of high risk based on noninvasive testing, as indicated by 1 or more of the following :
        1. Coronary artery calcium score at least 300 Agatston units, or at least 75th percentile for age, sex, and ethnicity (
        2. Duke Treadmill Score less than or equal to -11
        3. Echocardiographic wall motion abnormality involving greater than 2 segments, developing at dobutamine dose of less than 10 mcg/kg per minute or at heart rate less than 120 beats per minute
        4. Left ventricular ejection fraction 35% or less at rest
        5. Perfusion imaging shows evidence of global ischemia or large territory of myocardium at risk.
        6. Stress electrocardiogram findings of ST-segment elevation, ventricular arrhythmia, or at least 2 mm of ST-segment depression
        7. Stress-induced large perfusion defect or multiple moderate perfusion defects
        8. Stress-induced left ventricular dysfunction
    D. Following myocardial infarction and during risk-stratification phase, and 1 or more of the following:
        1. Clinically significant heart failure during hospital course
        2. Ischemia at low level of exercise on noninvasive testing
        3. Left ventricular ejection fraction 45% or less, and patient unable to undergo noninvasive testing
    E. Ischemia recurrent (by clinical or noninvasive testing) within 12 months of coronary artery bypass graft
    F. Non-ST-elevation coronary syndrome, and invasive strategy determined
    G. Occupation of patient directly involves safety of others (eg, bus driver, pilot, firefighter), and 1 or more of the following:
        1. Abnormal results on noninvasive testing
        2. Risk factors for coronary artery disease
    H. Pericarditis (acute), suspected, when signs and symptoms, troponin levels, and pattern of ST elevation cannot definitively rule out acute infarction
    I. Prinzmetal (variant) angina, suspected
    J. Progressive abnormalities on noninvasive testing
    K. Resuscitation of patient from cardiac arrest or ventricular tachycardia
    L. Risk stratification required (eg, prior to high-risk noncardiac surgery) in patient who cannot undergo noninvasive testing due to disability or illness
    M. Stent thrombosis, suspected, either abrupt closure or subacute, following percutaneous coronary intervention
IV. Coronary artery dissection, spontaneous, suspected
V. Heart failure, known or suspected, as indicated by 1 or more of the following

A. Associated with angina or anginal equivalent
B. Episodic heart failure with preserved ejection fraction on noninvasive testing
C. Left ventricular ejection fraction less than 45%, unexplained by noninvasive testing
D. Postmyocardial infarction ventricular aneurysm
E. Post myocardial infarction when left ventricular ejection fraction 35% or less
F. Preoperative planning needed before cardiac transplant
G. Reversible ischemia on stress echocardiogram or myocardial perfusion imaging, and revascularization (ie, coronary artery bypass graft, percutaneous coronary intervention) being considered
H. Wall motion abnormality involving more than 2 segments with low-dose dobutamine or at heart rate less than 120 beats per minute

VI. Hypertrophic cardiomyopathy, known or suspected, as indicated by 1 or more of the following
A. Alcohol septal ablation procedure needed
B. Coronary artery disease suspected, as indicated by ALL of the following:
1. Chest discomfort in setting of intermediate to high likelihood of coronary artery disease
2. Identification of coronary artery disease will affect management.
C. Measurement of left ventricular outflow gradient needed due to equivocal or discordant results on noninvasive testing

VII. Kawasaki disease, known

VIII. Preoperative or preprocedural planning needed before high-risk surgery for aneurysm repair without known coronary artery disease

IX. Pulmonary artery extrinsic compression of left main coronary artery, known or suspected, as indicated by ALL of the following
A. Ischemic heart disease, as indicated by anginal symptoms or abnormal left ventricular function
B. Long-standing pulmonary hypertension

X. Pulmonary hypertension, known or suspected

XI. Valvular heart disease, known or suspected, as indicated by 1 or more of the following
A. Atrial myxoma, when transesophageal echocardiography is indeterminate
B. Chronic severe secondary mitral regurgitation
C. Mild to moderate valvular heart disease, as indicated by 1 or more of the following:
1. Canadian Cardiovascular Society class II, III, or IV angina
2. Ejection fraction 45% or less
3. Heart failure
4. Ischemia documented by noninvasive testing
D. Noninvasive test results are inconclusive, inconsistent, or discordant with patient symptoms.
E. Preoperative or preprocedural planning needed before indicated valve surgery, transcatheter valve replacement or repair, or mitral balloon valvuloplasty, as indicated by 1 or more of the following:
1. Age or menopausal status, as indicated by 1 or more of the following:
a. Male patient 40 years or older
b. Postmenopausal female patient
2. Coronary artery disease, known or suspected (due to risk factors, symptoms, or noninvasive testing)
3. Ejection fraction less than 55%
F. Preoperative planning needed before Ross procedure to identify coronary orifices if not identified noninvasively

G. Severe aortic or mitral regurgitation on echocardiography, as indicated by ALL of the following:
    1. Ejection fraction less than 55%
    2. Enlarged left ventricle

XII. Repeat evaluation of specific area or structure with same imaging modality, as indicated by 1 or more of the following:
    A. Change in clinical status (eg, worsening symptoms or new associated symptoms)
    B. Need for interval reassessment that may impact treatment plan
    C. Need for re-imaging either prior to or after performance of invasive procedure

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Polysomnography; age 6 years or older, sleep staging with 4 or more additional parameters of sleep, attended by a technologist

CPT Code 95810

Sleep center PSG may be indicated for 1 or more of the following (1) :

I. Adult with obesity hypoventilation syndrome, suspected, as indicated by ALL of the following
    A. BMI greater than 30
    B. Daytime hypercapnia with PaCO 2 of 45 mm Hg (6.0 kPa) or greater
    C. Daytime hypoxemia with PaO 2 of 70 mm Hg (9.3 kPa) or less
    D. Normal TSH level
    E. No evidence of chronic obstructive pulmonary disease by pulmonary function tests (eg, normal FEV 1 /FVC ratio)

II. Adult with obstructive sleep apnea, suspected, as indicated by ALL of the following
    A. Portable or home PSG is not appropriate, as indicated by 1 or more of the following:
        1. Complex sleep disorder, suspected (eg, narcolepsy, cataplexy, periodic limb movement disorder)
        2. Home PSG services not available
        3. Patient unable to properly operate or tolerate home study equipment
        4. Previous home PSG results negative or inadequate for suspected obstructive sleep apnea or upper airway resistance syndrome
        5. Significant chronic obstructive pulmonary disease or other lung disease
        6. Significant heart failure
        7. Significant neurologic or neuromuscular disease
        8. Sleep center PSG coincident with CPAP titration as split-night study
    B. Signs or symptoms suggestive of moderate-risk to high-risk obstructive sleep apnea, including 1 or more of the following:
        1. Epworth sleepiness score of 10 or greater
        2. Excessive daytime sleepiness, fatigue, or awakening with gasping or choking, and high risk for injury, as indicated by 1 or more of the following :
            a. Falling asleep while driving
            b. Patient is commercial vehicle driver.

3. Excessive daytime sleepiness, fatigue, or awakening with gasping or choking, and significant risk factor for sleep apnea, as indicated by 1 or more of the following:
    a. BMI greater than 30
    b. Hypertension
4. Hypertension that is uncontrolled despite 3-drug regimen that includes diuretic
5. Observed apnea or choking episodes
6. Significant oxygen desaturation on overnight pulse oximetry
7. Snoring

III. Insomnia and 1 or more of the following
    A. Inadequate response to treatment of insomnia by neurologist or sleep specialist
    B. Periodic limb movement disorder
    C. Precipitous arousals with injurious behavior
    D. Sleep-related breathing disorder, suspected, as indicated by 1 or more of the following :
        1. Excessive daytime sleepiness
        2. Observed apnea or choking episodes
        3. Snoring
IV. Narcolepsy, suspected, as indicated by ALL of the following
    A. Signs or symptoms suggestive of narcolepsy, as indicated by 1 or more of the following:
        1. Cataplexy (ie, episode of sudden bilateral loss of postural tone associated with intense emotion)
        2. Excessive daytime sleepiness
        3. Hallucinations with sleep onset (hypnagogic) or upon awakening (hypnopompic)
        4. Recurrent daytime naps or lapses into sleep for over 3-month period
        5. Sleep paralysis (ie, brief episodic loss of voluntary movement that occurs during period of falling asleep or when awakening)
    B. PSG precedes multiple sleep latency test.
V. Parasomnia, as indicated by 1 or more of the following :
    A. Confusional arousal
    B. Inadequate response to treatment
    C. New onset in adult
    D. Rapid eye movement sleep behavior disorder
    E. Sleep-related eating disorder
    F. Sleep terrors (severe)
VI. Periodic limb movement disorder and 1 or more of the following
    A. Excessive daytime sleepiness
    B. Observed apnea or choking episodes
    C. Patient or bed partner notes limb movements during sleep.
    D. Snoring
VII. Restless leg syndrome and 1 or more of the following
    A. Excessive daytime sleepiness
    B. Inadequate response to treatment
    C. Observed apnea or choking episodes
    D. Snoring

Polysomnography; age 6 years or older, sleep staging with 4 or more additional parameters of sleep, with initiation of continuous positive airway pressure therapy or bilevel ventilation, attended by a technologist

CPT Code 95811

CPAP sleep center titration may be indicated for 1 or more of the following:

I. Adult with central sleep apnea syndrome due to congestive heart failure
II. Adult with obesity hypoventilation syndrome, as indicated by ALL of the following
    A. BMI greater than 30
    B. Daytime hypercapnia with PaCO 2 of 45 mm Hg (6.0 kPa) or greater
    C. Daytime hypoxemia with PaO 2 of 70 mm Hg (9.3 kPa) or less
    D. No evidence of chronic obstructive pulmonary disease by pulmonary function tests (eg, normal FEV 1 /FVC ratio)
    E. Sleep-disordered breathing or hypoventilation on polysomnography, as indicated by 1 or more of the following:
        1. Apnea-hypopnea index of 5 or greater
        2. Increase in PaCO 2 during sleep by more than 10 mm Hg (1.3 kPa) above value while awake
        3. Significant oxygen desaturation not explained by obstructive apneas or hypopneas
    F. TSH level normal
III. Adult with obstructive sleep apnea, as indicated by ALL of the following
    A. Obstructive sleep apnea, as indicated by 1 or more of the following:
        1. Mild obstructive sleep apnea (ie, apnea-hypopnea index or respiratory disturbance index between 5 and 15, determined with polysomnography) and 1 or more of the following:
            a. Cardiovascular disease documented (eg, hypertension, ischemic heart disease, heart failure, stroke)
            b. Excessive daytime sleepiness
            c. Fibromyalgia-like symptoms
            d. Headaches upon awakening
            e. Heartburn and reflux
            f. Impaired cognition
            g. Mood disorder
            h. Night sweats
            i. Nocturia or nocturnal enuresis
            j. Observed apnea or choking episodes
            k. Patient is commercial vehicle driver.
            l. Snoring
        2. Moderate or severe obstructive sleep apnea (ie, apnea-hypopnea index or respiratory disturbance index 15 or greater, determined with polysomnography)
        3. Upper airway resistance syndrome associated with unexplained excessive daytime sleepiness
    B. Home CPAP titration not an option, as indicated by 1 or more of the following :
        1. Chronic obstructive pulmonary disease or other lung disease
        2. Heart failure

3. No well-supported home CPAP titration services available
4. Obesity hypoventilation syndrome
5. Patient does not have ability to manage equipment.

IV. CPAP titration is coincident with split-night in-laboratory polysomnogram for suspected obstructive sleep apnea in patients 12 years and older.

Duplex scan of extremity veins including responses to compression and other maneuvers; complete bilateral study

CPT Code 93970

Duplex scan of extremity veins including responses to compression and other maneuvers; unilateral or limited study

CPT Code 93971

Duplex (Doppler) scan of lower extremity veins may be indicated for 1 or more of the following :

I. Anticoagulation treatment for DVT completed or near completion
II. DVT, suspected, as indicated by 1 or more of the following
    A. High clinical probability of DVT
    B. Initial scan for follow-up of positive D-dimer result
    C. Repeat scan for follow-up of positive D-dimer result, when results of initial scan normal
III. Patent foramen ovale with suspected paradoxical embolism
IV. Preoperative planning needed for vascular surgical procedure (eg, femoral-popliteal or femoral-tibial bypass, coronary artery bypass graft, dialysis access) proposing use of saphenous vein as possible conduit (ie, vein mapping)
V. Postprocedural surveillance after femoral-popliteal bypass, femoral-tibial-pedal bypass, or endovascular intervention
VI. Varicose veins, as indicated by ALL of the following
    A. Surgery or other procedure planned
    B. Varicose veins signs or symptoms, as indicated by 1 or more of the following:
        1. Leg edema
        2. Leg fatigue
        3. Leg pain
        4. Superficial thrombophlebitis
        5. Venous stasis ulcer
VII. Repeat evaluation of specific area or structure with same imaging modality, as indicated by 1 or more of the following:
    A. Change in clinical status (eg, worsening symptoms or new associated symptoms)
    B. Need for interval reassessment that may impact treatment plan

C. Need for re-imaging either prior to or after performance of invasive procedure

VIII. Duplex (Doppler) scan of upper extremity may be indicated for 1 or more of the following:

IX. Carpal tunnel syndrome, suspected, as indicated by ALL of the following:
   A. Clinical symptoms consistent with carpal tunnel syndrome (eg, numbness, tingling, pain, or weakness of fingers of one or both hands)
   B. Electromyographic findings equivocal or normal

X. Deep venous thrombosis, suspected, as indicated by 1 or more of the following
   A. Erythema or hand cyanosis, associated with swelling
   B. New visibly enlarged shoulder and chest wall collateral veins
   C. Unilateral edema of upper extremity

XI. Hemodialysis fistula (arteriovenous), as indicated by 1 or more of the following
   A. Assessment of access malfunction or occlusion (eg, difficulty with cannulation, low flow or increased venous pressures during dialysis, loss of palpable thrill)
   B. Evaluation of suspected arterial steal syndrome
   C. Postoperative assessment when access has failed to mature 6 weeks after placement
   D. Preoperative mapping and selection of vessels less than 3 months prior to access placement

XII. Peripheral arterial disease of upper extremity, suspected, as indicated by 1 or more of the following
   A. Finger ulcer or discoloration
   B. Hand or arm claudication
   C. Pulsatile mass, bruit, or hand ischemia following upper extremity vascular catheter placement
   D. Radial artery harvest planned in preoperative coronary artery bypass graft patient
   E. Thoracic outlet syndrome, suspected
   F. Trauma to upper extremity with suspected vascular injury
   G. Unilateral cold and painful hand

XIII. Postoperative surveillance of known upper extremity peripheral arterial disease following revascularization, at intervals of 1 month, 6 months, and annually thereafter

XIV. Vessel mapping prior to use of upper extremity blood vessels for arterial bypass surgery

XV. Repeat evaluation of specific area or structure with same imaging modality, as indicated by 1 or more of the following:
   A. Change in clinical status (eg, worsening symptoms or new associated symptoms)
   B. Need for interval reassessment that may impact treatment plan
   C. Need for re-imaging either prior to or after performance of invasive procedure

Endovenous ablation therapy of incompetent vein, extremity, inclusive of all imaging guidance and monitoring, percutaneous, radiofrequency; first vein treated

CPT Code 36475

Endovenous ablation therapy of incompetent vein, extremity, inclusive of all imaging guidance and monitoring, percutaneous, radiofrequency; second and subsequent veins treated in a single extremity, each through separate access sites (List separately in addition to code for primary procedure)

CPT Code 36476

Radiofrequency saphenous vein ablation may be indicated when ALL of the following are present:

I. Saphenofemoral valve incompetence documented by duplex ultrasound or other imaging test with valve closure time of greater than 500 msec
II. Saphenous venous insufficiency symptoms causing functional impairment, including 1 or more of the following :
    A. Bleeding or ruptured superficial varicose veins
    B. Leg edema
    C. Leg fatigue
    D. Leg pain
    E. Persistent or recurrent superficial thrombophlebitis
    F. Persistent or recurrent venous stasis ulcer
    G. Skin changes (eg, lipodermatosclerosis, hemosiderosis)
III. No clinically significant lower extremity arterial disease
IV. No deep venous thrombosis on duplex ultrasound or other imaging test
V. No significant symptomatic improvement in response to 3-month or longer trial of conservative therapy, as indicated by ALL of the following:
    A. Exercise program
    B. Graduated compression stockings
    C. Leg elevation
    D. Weight loss

Endovenous ablation therapy of incompetent vein, extremity, inclusive of all imaging guidance and monitoring, percutaneous, laser; first vein treated

CPT Code 36478

Endovascular laser saphenous vein ablation may be indicated when ALL of the following are present :

I. Saphenofemoral valve incompetence documented by duplex ultrasound or other imaging test with valve closure time of greater than 500 msec
II. Saphenous venous insufficiency symptoms causing functional impairment, including 1 or more of the following :
    A. Bleeding or ruptured superficial varicose veins
    B. Leg edema
    C. Leg fatigue
    D. Leg pain
    E. Persistent or recurrent superficial thrombophlebitis
    F. Persistent or recurrent venous stasis ulcer
    G. Skin changes (eg, lipodermatosclerosis, hemosiderosis)
III. No clinically significant lower extremity arterial disease
IV. No deep venous thrombosis on duplex ultrasound or other imaging test
V. No significant symptomatic improvement in response to 3-month or longer trial of conservative therapy, as indicated by ALL of the following:
    A. Exercise program
    B. Graduated compression stockings
    C. Leg elevation
    D. Weight loss

Arthrodesis, anterior interbody, including disc space preparation, discectomy, osteophytectomy and decompression of spinal cord and/or nerve roots; cervical below C2

CPT Code 22551

Procedure is indicated for 1 or more of the following

I. Cervical radiculopathy and ALL of the following :
    A. Patient has unremitting radicular pain or progressive weakness secondary to nerve root compression.
    B. Failure of 3-month trial of nonoperative treatment that includes 1 or more of the following:
        1. NSAIDs
        2. Non-narcotic analgesics (eg, tricyclic antidepressants, anticonvulsants)

3. Narcotic analgesics
4. Cervical collar
5. Physical therapy
6. Oral corticosteroids

C. MRI or other neuroimaging finding correlates with clinical signs and symptoms and demonstrates spinal stenosis or nerve root compression.

II. Spondylotic myelopathy treatment indicated by ALL of the following :
   A. Signs or symptoms of myelopathy are present as indicated by 1 or more of the following:
      1. Upper limb weakness in more than single nerve root distribution
      2. Lower limb weakness in upper motor neuron distribution
      3. Loss of dexterity (eg, clumsiness of hands)
      4. Bowel or bladder incontinence
      5. Frequent falls
      6. Hyperreflexia
      7. Hoffmann sign
      8. Increased extremity muscle tone or spasticity
      9. Gait abnormality
      10. Positive Babinski sign
      11. Alternative clinical signs or symptoms of myelopathy
   B. MRI or other neuroimaging finding correlates with clinical signs and symptoms and demonstrates cord compression due to 1 or more of the following :
      1. Herniated disk
      2. Osteophyte
III. Ossification of posterior longitudinal ligament with associated myelopathy
IV. Degenerative cervical spondylosis with kyphosis causing cord compression
V. Tumor of cervical spine causing pathologic fracture, cord compression, or instability
VI. Infection of cervical spine requiring decompression or debridement
VII. Cervical pseudarthrosis and ALL of the following:
   A. Symptoms (eg, pain) unresponsive to nonoperative therapy
   B. Alternative etiologies of symptoms ruled out
VIII. Degenerative spinal segment adjacent to prior decompressive or fusion procedure with 1 or more of the following :
   A. Symptomatic myelopathy corresponding clinically to adjacent level
   B. Symptomatic radiculopathy corresponding clinically to adjacent level and unresponsive to nonoperative therapy
IX. Posttraumatic cervical instability (eg, unstable anterior column fracture)
X. Need for procedure as part of treating cervical spine injury (eg, trauma) as indicated by ALL of the following :
   A. Acutely symptomatic cervical radiculopathy or myelopathy
   B. MRI or other neuroimaging finding (eg, cord compression, root compression) demonstrates pathologic anatomy corresponding to symptoms.

Arthroscopy, shoulder, surgical; with rotator cuff repair

CPT Code 29827

Rotator cuff repair is needed on the basis of MRI or other imaging confirmation of diagnosis and 1 or more of the following:

I. Acute full-thickness injury repair is needed on the basis of 1 or more of the following:
   A. Massive avulsion
   B. New inability to externally rotate arm against resistance
   C. Inability to elevate arm on physical examination
   D. Disabling limitation of function in affected arm
II. Chronic full-thickness tear that requires treatment due to ALL of the following:
   A. Symptomatic (ie, pain or clinically significant functional impairment)
   B. Lack of improvement after 6 to 12 weeks of nonoperative therapy (eg, NSAIDs, physical therapy)
III. Partial-thickness tear with insufficient symptom improvement after at least 4 months of nonoperative therapy (eg, NSAIDs, physical therapy)
IV. Revision of prior rotator cuff repair

Insertion or replacement of permanent implantable defibrillator system, with transvenous lead(s), single or dual chamber

CPT Code 33249

Transvenous insertion of implantable cardioverter-defibrillator (ICD) with possible electrophysiologic study is indicated by ALL of the following

I. Patient has cardiac condition that requires ICD placement as indicated by 1 or more of the following:
   A. Cardiac arrest due to ventricular fibrillation without known treatable precipitating cause (eg, acute myocardial ischemia, severe electrolyte disorder)
   B. Hypotension due to ventricular tachycardia without known treatable precipitating cause (eg, acute myocardial ischemia, severe electrolyte disorder)
   C. Ischemic cardiomyopathy (known coronary artery disease without history of MI) and left ventricular ejection fraction less than or equal to 35%
   D. Ventricular fibrillation or polymorphic ventricular tachycardia within 48 hours of MI and 1 or more of the following:
      1. Revascularization of infract vessel not feasible
      2. Inducible ventricular tachycardia/ventricular fibrillation at electrophysiologic study performed 4 or more days after revascularization
   E. Patient within 40 days of MI and 1 or more of the following:

1. Syncope due to ventricular tachyarrhythmia and no evidence of reversible ischemia
2. New York Heart Association class I heart failure with ALL of the following:
    a. Left ventricular ejection fraction less than or equal to 30%
    b. Recovery of left ventricular function not expected
    c. Patient having permanent pacemaker placed
3. New York Heart Association class II or III heart failure with ALL of the following:
    a. Diminished left ventricular ejection fraction as indicated by 1 or more of the following:
        I. Ejection fraction less than or equal to 35%
        II. Ejection fraction less than or equal to 40%, with episodes of non-sustained ventricular tachycardia, and inducible ventricular arrhythmia at electrophysiologic study
    b. Recovery of left ventricular function not expected
    c. Patient having permanent pacemaker placed
4. Sustained (lasting more than 30 seconds) or hemodynamically significant [C] ventricular tachyarrhythmia and ALL of the following:
    a. Between 2 to 40 days post MI
    b. Absence of myocardial ischemia that can be treated with revascularization

F. Patient with history of MI (more than 40 days ago) and 1 or more of the following:
1. Left ventricular ejection fraction less than or equal to 35%
2. Left ventricular ejection fraction less than or equal to 40%, and patient has had episode of nonsustained [B] ventricular tachyarrhythmia
3. Left ventricular ejection fraction less than or equal to 40%, and patient is having permanent pacemaker placed

G. Patient who has been revascularized (with bypass surgery or percutaneous intervention) within last 90 days and is not within 40 days of acute MI with 1 or more of the following:
1. Patient requires permanent pacemaker and ALL of the following:
    a. Left ventricular ejection fraction 35% or lower
    b. Recovery of left ventricular ejection fraction not expected
2. Syncope due to ventricular tachyarrhythmia and no evidence of reversible ischemia
3. New York Heart Association class I heart failure with left ventricular ejection fraction less than or equal to 30% (and recovery of left ventricular function not expected)
4. New York Heart Association class II or III heart failure with left ventricular ejection fraction less than or equal to 35% (and recovery of left ventricular function not expected)
5. Patient listed for heart transplant or has implanted left ventricular assist device
6. History of sustained (lasting more than 30 seconds) or hemodynamically significant ventricular tachyarrhythmia prior to revascularization and 1 or more of the following:
    a. Ejection fraction of less than 40%
    b. Ventricular tachyarrhythmia unlikely due to myocardial ischemia
    c. Revascularization incomplete (eg, areas of ischemic myocardium remain)
7. Sustained (lasting more than 30 seconds) or hemodynamically significant [C] ventricular tachyarrhythmia after revascularization and 1 or more of the following:
    a. Ventricular tachyarrhythmia not due to ischemia
    b. Ventricular tachyarrhythmia can be treated with ablation therapy.
    c. Ejection fraction of less than 40%
    d. Revascularization incomplete (eg, areas of ischemic myocardium remain)

H. Spontaneous sustained (lasting 30 seconds or longer) hemodynamically stable ventricular tachycardia and 1 or more of the following:
   1. Left ventricular function less than or equal to 35%
   2. History of MI (more than 40 days ago)
   3. Nonischemic dilated cardiomyopathy diagnosed more than 3 months ago

I. Unexplained syncope with 1 or more of the following:
   1. Inducible ventricular tachycardia or ventricular fibrillation on electrophysiologic study
   2. History of coronary artery disease, and left ventricular ejection fraction less than 50%
   3. Hypertrophic cardiomyopathy
   4. Left ventricular hypertrophy (other than hypertrophic cardiomyopathy), and left ventricular ejection fraction less than 50%
   5. Cardiac amyloidosis
   6. Arrhythmogenic right ventricular cardiomyopathy
   7. Long QT syndrome, Brugada ECG pattern, or catecholaminergic polymorphic ventricular tachycardia
   8. Advanced structural heart disease of unknown or untreatable cause

J. Nonischemic cardiomyopathy diagnosed less than 9 months ago with 1 or more of the following:
   1. Syncope due to ventricular tachycardia and no evidence of ischemia
   2. Sustained (lasting 30 seconds or longer) or hemodynamically significant ventricular tachyarrhythmia
   3. New York Heart Association class II or III heart failure and ALL of the following:
      a. Left ventricular ejection fraction 35% or less
      b. Left ventricular ejection fraction unlikely to improve
      c. Pacemaker required
   4. Patient listed for heart transplant or has implanted left ventricular assist device
   5. Nonischemic cardiomyopathy diagnosed 3 to 9 months ago, with left ventricular ejection fraction 35% or less that is unlikely to improve

K. Nonischemic cardiomyopathy diagnosed more than 9 months ago with 1 or more of the following:
   1. Left ventricular ejection fraction less than or equal to 30%, with symptomatic heart failure (eg, New York Heart Association class II through ambulatory class IV
   2. Left ventricular ejection fraction less than or equal to 40%, and patient has been on guideline-directed medical therapy (eg, ACE-inhibitor, beta-blocker) for at least 9 months
   3. History of Chagas disease
   4. History of myotonic dystrophy
   5. History of heart failure due to amyloidosis
   6. History of giant cell myocarditis
   7. Peripartum cardiomyopathy persisting more than 3 months post partum

L. Patient has genetic condition that increases risk of sudden cardiac death as indicated by 1 or more of the following :
   1. Long QT syndrome and1 or more of the following:
      a. History of cardiac arrest
      b. Strong family history of cardiac arrest
      c. Known SCN5A mutation
      d. Unexplained syncope
      e. Spontaneous ventricular tachycardia

f. Intolerance of beta-blocker therapy
g. Corrected QT interval greater than 500 milliseconds

2. Arrhythmogenic right ventricular dysplasia or cardiomyopathy
3. Brugada syndrome and 1 or more of the following :
   a. Inducible sustained (lasting longer than 30 seconds) ventricular tachycardia or ventricular fibrillation on electrophysiologic study
   b. History of cardiac arrest
   c. History of syncope
   d. Spontaneous ventricular tachycardia
   e. ST-segment elevation on ECG leads V 1 to V 3
   f. Family history of cardiac arrest with inducible ventricular tachycardia or ventricular fibrillation on electrophysiologic study
4. Catecholaminergic polymorphic ventricular tachycardia and1 or more of the following :
   a. Spontaneous sustained (lasting longer than 30 seconds) or nonsustained ventricular tachycardia
   b. Unexplained syncope
5. Hypertrophic cardiomyopathy and1 or more of the following :
   a. Spontaneous sustained (lasting longer than 30 seconds) or nonsustained ventricular tachycardia
   b. Unexplained syncope
   c. Left ventricle thickness of 30 mm or greater
   d. Hypotensive response to exercise
   e. Family history of sudden cardiac death (eg, cardiac arrest), or ventricular tachycardia presumed to be due to hypertrophic cardiomyopathy
6. Short QT syndrome
7. Noncompaction of left ventricle
8. Other familial cardiomyopathy associated with sudden death

M. Cardiac sarcoidosis and 1 or more of the following :
   1. Spontaneous sustained (lasting longer than 30 seconds) ventricular tachyarrhythmia or cardiac arrest
   2. Left ventricular ejection fraction 49% or less, or right ventricular ejection fraction less than 40% despite optimal medical therapy, including immunosuppression if active inflammation is present
   3. Permanent pacemaker required
   4. Unexplained syncope or near-syncope
   5. Inducible sustained (lasting longer than 30 seconds) ventricular arrhythmia at electrophysiologic study
N. Congenital heart disease and 1 or more of the following :
   1. Sustained (lasting 30 seconds or longer) or hemodynamically significant [C] ventricular tachyarrhythmia without identified reversible etiology
   2. Inducible sustained (lasting longer than 30 seconds) ventricular tachyarrhythmia on electrophysiologic study
   3. Tetralogy of Fallot and 1 or more of the following:
      a. QRS duration of 180 milliseconds or more
      b. Right ventricular scarring

c. Other risk for sudden cardiac death (eg, impaired systolic or diastolic function, non-sustained ventricular tachyarrhythmia)
4. Single ventricle or systemic right ventricle with ejection fraction 35% or less
5. Left ventricular ejection fraction 35% or less
6. Awaiting heart transplant
7. Syncope of unknown origin with high suspicion of ventricular tachyarrhythmia

II. Patient without contraindication to ICD placement as indicated by ALL of the following:
A. No condition limiting life expectancy to less than 1 year (eg, advanced malignancy)
B. No treatment-refractory class IV heart failure in patient who is not candidate for cardiac transplant or left ventricular assist device
C. No significant psychiatric illness that may be aggravated by device implantation or that may preclude regular follow-up
D. No ongoing IV drug abuse
E. No unresolved infection associated with risk for hematogenous seeding
F. No history of significant nonadherence with medical therapy and follow-up

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Laparoscopy, surgical, colpopexy (suspension of vaginal apex)

CPT Code 57425

Procedure is indicated for 1 or more of the following

I. Apical (uterine or vaginal) vault prolapse suspension is needed, indicated by ALL of the following:
A. Symptomatic prolapse (stage II or greater) is present, as indicated by 1 or more of the following:
1. Cervical ulceration
2. Dyspareunia
3. Inability to wear a tampon
4. Urinary incontinence
5. Urinary infections
6. Urinary retention
7. Vaginal bleeding
8. Vaginal mass sensation

B. Nonsurgical treatment (eg, conservative care with pessary, pelvic floor muscle training) is not appropriate, as indicated by 1 or more of the following:
1. Failure of conservative care
2. Patient declines conservative care (eg, pessary).

II. Anterior vaginal prolapse (cystocele) repair is needed, indicated by ALL of the following:
A. Symptomatic cystocele is present, indicated by 1 or more of the following:
1. Dyspareunia
2. Recurrent urinary tract infections
3. Renal failure
4. Urinary incontinence

5. Urinary retention
6. Vaginal mass (with or without pain)

B. Nonsurgical treatment (eg, conservative care with pessary, pelvic floor muscle training) is not appropriate, indicated by 1 or more of the following:
1. Failure of conservative care
2. Patient declines conservative care (eg, pessary).

III. Posterior vaginal prolapse (rectocele, enterocele) repair is needed, as indicated by ALL of the following:
A. Symptomatic posterior vaginal prolapse is present, as indicated by 1 or more of the following:
1. Anorectal pain
2. Bowel obstruction
3. Constipation
4. Digital reduction of prolapse is needed to improve bowel emptying.
5. Dyspareunia
6. Fecal incontinence
7. Mass bulging into introitus
8. Persistent rectal bleeding
9. Physical interference with intercourse
10. Pruritus ani
11. Rectocele is 2 cm or greater in size.
12. Sensation of fullness in vagina or perineal area
13. Stool pocketing in vagina

B. Nonsurgical treatment (eg, conservative care with pessary, pelvic floor muscle training) is not appropriate, as indicated by 1 or more of the following:
1. Failure of conservative care
2. Patient declines conservative care (eg, pessary).

Laminectomy, facetectomy and foraminotomy (unilateral or bilateral with decompression of spinal cord, cauda equina and/or nerve root[s], [eg, spinal or lateral recess stenosis]), single vertebral segment; lumbar

CPT Code 63047

Procedure is indicated for 1 or more of the following

I. Spinal cord compression (myelopathy), as indicated by ALL of the following:
A. Progressive or severe neurologic deficits consistent with spinal cord compression (eg, bladder or bowel incontinence)
B. Imaging findings of lumbar cord compression that correlate with clinical findings

II. Cauda equina syndrome, as indicated by 1 or more of the following:
A. Bowel dysfunction
B. Bladder dysfunction
C. Saddle anesthesia

D. Bilateral lower extremity neurologic abnormalities

III. Lumbar spinal stenosis, as indicated by 1 or more of the following :
   A. Rapidly progressive or very severe symptoms of neurogenic claudication with imaging findings of lumbar spinal stenosis that correlate to clinical findings
   B. Leg or buttock neurogenic claudication symptoms and ALL of the following:
      1. Symptoms are persistent and disabling.
      2. Imaging findings of lumbar spinal stenosis that correlate with clinical findings
      3. Failure of 3 months of nonoperative therapy

IV. Lumbar spondylolisthesis, as indicated by 1 or more of the following :
   A. Rapidly progressive or severe neurologic deficits (eg, bowel or bladder dysfunction)
   B. Symptoms requiring treatment indicated by ALL of the following:
      1. Patient has persistent disabling symptoms, including 1 or more of the following:
         a. Low back pain
         b. Neurogenic claudication
         c. Radicular pain
      2. Treatment is indicated by ALL of the following:
         a. Listhesis demonstrated on imaging
         b. Symptoms correlate with findings on MRI or other imaging
         c. Failure of 3 months of nonoperative therapy

V. Lumbar disk disease and ALL of the following:
   A. Clinical findings include 1 or more of the following:
      1. Motor weakness
      2. Unremitting pain accompanied by loss of lower extremity reflex, dermatomal loss of sensation, or alternative clinical findings consistent with radiculopathy
   B. Imaging findings of lumbar disk disease that correlate with clinical findings
   C. Failure of 6 weeks of nonoperative therapy that includes 1 or more of the following:
      1. Medication (eg, NSAIDs, analgesics)
      2. Physical therapy
      3. Epidural steroids

VI. Dorsal rhizotomy for spasticity (eg, cerebral palsy)

VII. Signs or symptoms of lumbar disease (eg, pain, motor weakness, bowel or bladder incontinence) secondary to tumor or metastatic neoplasm

VIII. Signs or symptoms of lumbar disease (eg, pain, motor weakness, bowel or bladder incontinence) secondary to infectious process (eg, epidural abscess)

IX. Signs or symptoms of lumbar disease (eg, pain, motor weakness, bowel or bladder incontinence) secondary to acute trauma

Myocardial perfusion imaging, tomographic (SPECT) (including attenuation correction, qualitative or quantitative wall motion, EF by first pass or gated technique, additional quantification, when performed); multiple studies, at rest and/or stress (exercise or pharmacologic) and/or redistribution and/or rest reinjection

CPT Code 78452

INDICATIONS: Patient selection should be based on clinical grounds:

I. Patients with a high pretest probability of disease are not usually candidates for a study for diagnostic purposes, though the size and reversibility of a defect and its functional consequences may be required for clinical decision-making.
II. Patients with a moderate probability of disease benefit the most from the study when the diagnosis is in question.
III. Selection of tests should be made within the context of other tests, scheduled and previously performed so that the anticipated information obtained is unique and not redundant.
IV. Redundant testing where multiple tests are done revealing the same information is not medically necessary and should be appropriately denied if reviewed.

Radionuclide imaging may be employed in the assessment of a variety of conditions associated with primary coronary artery disease. Some of these conditions include:

I. Assessment of the functional and prognostic importance of angina, chest pain, or angina equivalent symptoms.
II. Diagnostic evaluation of patients with chest pain and uninterpretable or equivocal ECG changes occurring naturally or caused by drugs, bundle branch block, or left ventricular hypertrophy.
III. Risk assessment of re-evaluation of disease in patients who are asymptomatic or have stable symptoms, with known atherosclerotic heart disease on catheterization or SPECT perfusion imaging, who have not had a revascularization procedure within the past two years or greater than 2 years since last imaging study.
IV. Detection of coronary artery disease in patients, without chest pain syndrome, with new-onset of diagnosed heart failure or left ventricular systolic dysfunction.
V. Evaluation of ischemic versus non-ischemic cardiomyopathy when cardiac catheterization / coronary angiography is not planned.
VI. Evaluation of myocardial perfusion viability or function before and more than or equal to 5 years after coronary artery bypass surgery or greater than or equal to 2 years after percutaneous perfusion procedures, unless new clinical signs or symptoms necessitate reevaluation.
VII. Quantification and surveillance of myocardial infarction and prognostication in patient with infarction.
VIII. Preoperative assessment for non-cardiac surgery, when used to determine risk for surgery or perioperative management in:

A. Patients with minor or intermediate clinical risk predictors and poor functional capacity.
B. Patients with intermediate or high likelihood of coronary heart disease, or patients with poor functional capacity undergoing high risk non-cardiac surgery.

The ACA/AHA 2014 Guidelines on Perioperative Cardiovascular Evaluation and Care for Non-Cardiac Surgery (JACC 2014); provides the following information regarding categorization of surgical risk. They include:

I. high risk/intermediate risk surgery: aortic and peripheral vascular surgery; intraperitoneal and intrathoracic surgery, carotid endarterectomy, head and neck surgery, orthopedic surgery and prostate surgery;
II. low risk surgery: endoscopic procedure, superficial surgery, cataract surgery, breast surgery, ambulatory surgery;
III. The Guidelines establish poor functional capacity as = less than 4 METS;
IV. Utilization of these tests is based on the presence of multiple risk factors, the level of functional capacity, the risk of surgery proposed, and the likelihood that the results of the cardiac testing would change the management.
V. Evaluation of ventricular function in patients with non-ischemic myocardial disease.
VI. Evaluation of patients in whom an accurate measure of the ejection fraction is needed to make a determination of whether to implant a defibrillator or biventricular pacemaker.
VII. Evaluation of patient receiving chemotherapeutic drugs which are potentially cardiotoxic (e.g., Adriamycin, Herceptin).

LIMITATIONS:

Myocardial perfusion studies performed based on the presence of risk factors in the absence of cardiac symptoms, cardiac abnormalities on physical examination, or abnormalities on cardiac testing (e.g., electrocardiographic tests, echocardiography, treadmill stress testing, etc.) will be considered screening and denied as not covered by Medicare.

Tests that are anticipated to provide information duplicative of another test already performed will be denied as not medically necessary.

Tests performed when the results would not be anticipated to influence medical management decisions will be denied as not medically necessary.

Myocardial perfusion studies performed subsequent to a diagnostic myocardial PET scan will be denied as not medically necessary.

Infarct avid scintigraphy will be denied if the diagnosis of myocardial infarction has already been confirmed by enzymes or EKG.

Tests performed unrelated to changes in a patient's signs or symptoms, or for immediate preoperative screening without signs or symptoms will be denied as medically unnecessary.

Tests performed for risk assessment prior to high risk non-cardiac surgery in asymptomatic patients within one year following normal catheterization or non-invasive test will be considered medically unnecessary and denied.

Tests performed for preoperative evaluation in patients undergoing low-risk surgery will be denied.

Monitoring for localization of cerebral seizure focus by cable or radio, 16 or more channel telemetry, combined electroencephalographic (EEG) and video recording and interpretation (eg, for presurgical localization), each 24 hours

CPT Code 95951

EEG video monitoring is indicated for 1 or more of the following

I. Patient has continued symptoms, and test results are inconclusive thus far as indicated by ALL of the following :
   A. Alternative evaluation, including ambulatory EEG monitoring (without video) or outpatient sleep study with EEG monitoring (polysomnography) is inconclusive or cannot be used because of 1 or more of the following:
      1. Alternative evaluation was performed but was nondiagnostic.
      2. Withdrawal of anticonvulsant medication as outpatient deemed unsafe
      3. Alternative evaluation deemed not clinically helpful or appropriate for specific patient situation
      4. Seizures or seizure-like events occur infrequently (ie, fewer than 3 times per week).
   B. Patient's symptoms require further evaluation as indicated by 1 or more of the following:
      1. Intractable recurrent seizures persist despite therapeutic levels of multiple anticonvulsant medications.
      2. Suspected psychogenic nonepileptic seizures ("pseudoseizures") or other recurrent paroxysmal seizure or seizure-like behavioral events and ALL of the following:
         a. Normal interictal EEG, or interictal EEG findings not consistent with symptomatology
         b. Clinical suspicion of nonepileptic etiology
      3. Choice of anticonvulsant therapy depends on seizure diagnosis or classification, and it cannot be identified by observation and interictal EEG.
      4. Suspected nocturnal seizures and paroxysmal arousals, with unconscious dystonic movement, repetitive motor activity, or episodic nocturnal ambulation
II. Localization of seizure focus for patient being considered for epilepsy surgery
III. Need to determine diagnosis and nature or frequency of seizures, and patient has poor awareness or ability to communicate as indicated by 1 or more of the following :
   A. Indistinct seizure events (eg, absence seizures)
   B. Hampered ability to communicate (eg, patients with autism)
   C. Encephalopathy (eg, Altered mental status that is severe or persistent)

Insertion Of New Or Replacement Of Permanent Pacemaker With Transvenous Electrode(S); Atrial And Ventricular

CPT Code 33208

Cardiac pacemaker implantation may be indicated for 1 or more of the following:

I. Atrial fibrillation and 1 or more of the following :
   A. Episodes of excessively rapid heart rate, alternating with periods of symptomatic sinus bradycardia (ie, tachycardia-bradycardia syndrome)
   B. Inability to control rapid heart rate with medications, and pacing coincident with atrioventricular nodal ablation
   C. Symptomatic bradycardia in absence of drugs that interfere with atrioventricular nodal conduction (eg, beta-blockers, calcium channel blockers, or digoxin)

II. Atrioventricular block, as indicated by 1 or more of the following:
   A. Any degree of atrioventricular, bifascicular, or trifascicular block, in association with progressive infiltrative or neuromuscular disease that can cause cardiac conduction system disease (eg, sarcoidosis, amyloidosis, muscular dystrophy)
   B. Bifascicular or trifascicular block, as indicated by 1 or more of the following:
      1. Alternating bundle branch block
      2. Intermittent third-degree atrioventricular block
      3. Pacing-induced infra-His block that is not physiologic
      4. Prolonged His-ventricular interval of more than 100 msec on electrophysiologic study
      5. Type II (Mobitz II) second-degree atrioventricular block
   C. First-degree atrioventricular block, as indicated by ALL of the following:
      1. Symptomatic or hemodynamically significant first-degree atrioventricular block with PR interval more than 0.3 seconds
      2. Temporary pacing produces hemodynamic improvement (documented by echocardiography or electrophysiologic study).
   D. Second-degree atrioventricular block, as indicated by 1 or more of the following:
      1. Asymptomatic asystole lasting 3 seconds or longer
      2. Asymptomatic bradycardia with heart rate less than 40 beats per minute while awake
      3. Persistent second-degree atrioventricular block following cardiac surgery
      4. Symptomatic bradycardia
   E. Third-degree atrioventricular block (ie, complete heart block), as indicated by 1 or more of the following:
      1. Asymptomatic asystole lasting 3 seconds or longer
      2. Asymptomatic bradycardia with heart rate less than 40 beats per minute
      3. Atrial fibrillation
      4. Congenital third-degree atrioventricular block and 1 or more of the following:
         a. Abrupt ventricular pauses that are 2 to 3 times cardiac cycle width
         b. Complex ventricular ectopy
         c. Infant with congenital heart malformation and ventricular heart rate less than 70 beats per minute

d. Infant with ventricular heart rate less than 55 beats per minute
e. Offspring of female who has anti-SSA/Ro antibodies secondary to connective tissue disease (eg, lupus)
f. Prolonged QTc interval
g. Symptomatic bradycardia for age
h. Ventricular dysfunction (ie, heart failure)
i. Wide QRS escape rhythm

5. Persistent third-degree atrioventricular block following cardiac surgery
6. Symptomatic bradycardia

III. Cardiac resynchronization therapy, as indicated by ALL of the following
A. Left ventricular ejection fraction of 35% or less
B. Patient receiving optimal medical therapy for heart failure
C. QRS interval of 0.12 seconds or longer
D. Sinus rhythm, or atrial fibrillation requiring ventricular pacing
E. Symptomatic heart failure (New York Heart Association class II to IV)
F. Patient has life expectancy of at least 1 year with good functional capacity.

IV. Cardiac transplant associated with 1 or more of the following:
A. Bradycardia that limits participation in cardiac rehabilitation
B. Symptomatic bradycardia
C. Syncope, with or without documented bradycardia

V. Congenital long QT syndrome

VI. Hypersensitive carotid sinus syndrome, as indicated by ALL of the following
A. All noninterventional treatment options have been considered or have been tried and failed.
B. Multiple syncopal episodes
C. Other treatable causes of syncope have been ruled out.
D. Potential harm associated with future episodes outweighs procedural and ongoing risks of having pacemaker.
E. Symptoms reproduced with carotid sinus stimulation and associated with more than 3-second episode of ventricular asystole

VII. Hypertrophic cardiomyopathy, as indicated by 1 or more of the following
A. Atrioventricular block following septal alcohol ablation
B. Echocardiogram demonstrates significant resting or provoked left ventricular outflow tract obstruction or gradient.
C. Septal myectomy or ablation contraindicated in symptomatic patient
D. Severe symptoms related to left ventricular outflow tract obstruction refractory to medical treatment

VIII. Myocardial infarction and 1 or more of the following:
A. Persistent second-degree atrioventricular block in His-Purkinje system with alternating bundle branch block
B. Persistent third-degree atrioventricular block within or below His-Purkinje system
C. Transient second-degree or third-degree atrioventricular block that is infranodal or associated with bundle branch block
D. Symptomatic and persistent second-degree or third-degree atrioventricular block

IX. Sinus node dysfunction, as indicated by 1 or more of the following:
A. Constant or episodic heart rate less than 40 beats per minute while awake (either spontaneous or medication-induced)

B. Sinus node dysfunction discovered or provoked during electrophysiologic study
C. Symptomatic bradycardia
D. Symptomatic chronotropic incompetence
E. Symptomatic drug-induced bradycardia, when drug is required for medical condition (eg, beta-blockers for congenital long QT syndrome)
F. Symptomatic frequent sinus pauses

X. Supraventricular tachycardia, as indicated by ALL of the following:
A. Absence of accessory pathway with anterograde conduction on electrophysiologic study
B. Failure of drugs and catheter ablation to control recurrent episodes of tachycardia
C. Pacing terminates tachycardia during electrophysiologic study.

XI. Syncope, as indicated by ALL of the following
A. Multiple syncopal episodes
B. Neurocardiogenic syncope documented by tilt table testing or electrocardiographic monitoring
C. Other treatable causes of syncope have been ruled out.
D. All noninvasive treatment options have been considered or have been tried and failed.