CIGNA MEDICAL COVERAGE POLICIES- RADIOLOGY

Peripheral Vascular Disease (PVD) Imaging Guidelines

Effective Date: February 02, 2027

Instructions for use

The following coverage policy applies to health benefit plans administered by Cigna. Coverage policies are intended to provide guidance in interpreting certain standard Cigna benefit plans and are used by medical directors and other health care professionals in making medical necessity and other coverage determinations. Please note the terms of a customer's particular benefit plan document may differ significantly from the standard benefit plans upon which these coverage policies are based. For example, a customer's benefit plan document may contain a specific exclusion related to a topic addressed in a coverage policy.

In the event of a conflict, a customer's benefit plan document always supersedes the information in the coverage policy. In the absence of federal or state coverage mandates, benefits are ultimately determined by the terms of the applicable benefit plan document. Coverage determinations in each specific instance require consideration of:

1. The terms of the applicable benefit plan document in effect on the date of service
2. Any applicable laws and regulations
3. Any relevant collateral source materials including coverage policies
4. The specific facts of the particular situation

Coverage policies relate exclusively to the administration of health benefit plans. Coverage policies are not recommendations for treatment and should never be used as treatment guidelines.

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These guidelines include procedures EviCore does not review for Cigna. Please refer to the **Cigna CPT code list** for the current list of high-tech imaging procedures that EviCore reviews for Cigna.

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Abbreviations and Glossary for the PVD Imaging Guidelines

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(See also: Cardiac Imaging Guidelines Glossary)

AAA	Abdominal aortic aneurysm
ABI	Ankle brachial index: a noninvasive, non-imaging test for arterial insufficiency – (see toe-brachial index below). This testing can also be done after exercise if resting results are normal.
Claudication or intermittent claudication	usually a painful cramping sensation of the legs with walking or severe leg fatigue
CLI	Critical Limb Ischemia
CTA	Computed tomography angiography
CTV	Computed tomography venography
DLCO	Diffusion capacity: defined as the volume of carbon monoxide transferred into the blood per minute per mmHg of carbon monoxide partial pressure
DVT	Deep venous thrombosis
ECG	Electrocardiogram
ENT	Ears, Nose, Throat
EVAR	Endovascular Aneurysm Repair
HbA1C	Hemoglobin A1C: test used to determine blood sugar control for individuals with diabetes
MRA	Magnetic resonance angiography

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MRV	Magnetic resonance venography
PAD	Peripheral artery disease
PAH	Pulmonary artery hypertension
PFT	Pulmonary function tests
PVD	Peripheral vascular disease
PSV ratio	Peak systolic velocities
SVC	Superior vena cava
TEVAR	Thoracic Endovascular Aortic Repair
TIA	Transient ischemic attack
TTE	Transthoracic echocardiogram
Toe-Brachial Index	Useful in individuals with ABI above the normal range due to non-compressible posterior tibial or dorsalis pedis arteries
V/Q Scan	Ventilation and perfusion scan

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General Guidelines (PVD-1.0)

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General Guidelines

Criteria

- Prior to considering advanced imaging, a pertinent clinical evaluation or meaningful technological contact performed since the symptoms began or worsened is required describing any relevant medical treatments and a vascular history and physical that includes (when applicable):
  - Palpation of pulses
  - Evaluation of lower extremities for presence of non-healing wounds or gangrene
  - Associated skin changes such as thickened nails, absence of hair in the feet or calves, cool extremities
  - Evaluation for the presence of arterial bruits
  - Appropriate laboratory studies
  - Non-advanced imaging modalities, such as recent ABIs, venous duplex or venous valvular insufficiency study (VVI) performed after symptoms started or worsened
  - The affected limb(s), the extent of the edema (calf and/or thigh), pitting or non-pitting. With regard to venous insufficiency, presence or absence of hyperpigmentation or other skin changes, ulcerations if applicable, size of varicosities if present as well as distribution
  - Arterial examination to rule out phlegmasia alba/cerulea dolens which is compromised arterial flow secondary to extensive DVT if applicable
  - Appropriate laboratory studies, for example d-dimer, if applicable
- Arterial- ABI should be measured first:
  - If normal, then further vascular studies are generally considered not medically necessary.
  - If clinical suspicion for PAD remains high with normal ABI's, exercise ABI's (CPT® 93924) can be performed on a treadmill to elicit ischemia.
  - The TBI (toe-brachial index) is used to establish the diagnosis of PAD in the setting of non-compressible arteries (ABI ≥1.40) and may also be used to assess perfusion in individuals with suspected CLI (rest pain and/or non-healing wound).
- If a prior imaging study (Ultrasound, MRA, CTA, Catheter angiogram, etc.) has been completed for a condition, a follow-up, additional, or repeat study for the same condition is generally considered not medically necessary unless there has been

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a change in the individual's condition, previous imaging showed an indeterminate finding, or condition-specific sections in these guidelines support routine follow-up imaging.

- Runoff studies (CPT® 75635 for CTA or CPT® 74185, CPT® 73725, and CPT® 73725 for MRA) image from the umbilicus to the feet.
  - CTA Abdomen and lower extremities should be reported as CPT® 75635, rather than using the individual CPT® codes for the abdomen, pelvis, and legs.
  - MRA Abdomen, MRA Pelvis, and MRA Lower extremities should be reported as CPT® 74185, CPT® 73725, and CPT® 73725. The CPT® code for MRA Pelvis (CPT® 72198) should not be included in this circumstance.
- CTA Head and Neck should be reported as CPT® 70471, rather than using the individual codes for the CTA Head and CTA Neck.
- Venous-imaging
  - Venous duplex (CPT® 93970, CPT® 93971) of the limb is the initial imaging of choice.
  - Follow-up duplex imaging is considered not medically necessary to document resolution and should only be obtained for new signs/symptoms or for concerns of propagation of thrombus when the treatment plan would change (insertion of IVC filter, change of anticoagulation, etc.).

Evidence Discussion

Venous duplex should visualize the veins, with demonstration of the presence or absence of compressibility and venous flow. Venous valvular insufficiency studies visualize the veins of the lower extremity, assess for reflux (reversal of venous antegrade flow after valve closure) and measure its duration. CTV or MRV Abdomen and Pelvis images with contrast involves taking images from the diaphragm to just below the inguinal ligament after a delay of a few minutes after IV contrast is administered to optimize filling and therefore visualization of the venous vasculature.

Venous disease can be classified into three categories:

- Veno-occlusive disease
  - Types of thrombotic disease
    - Superficial venous thrombosis
    - Deep venous thrombosis
    - Iliac vein obstruction, unilateral or bilateral
    - May-Thurner syndrome
  - Signs/Symptoms of veno-occlusive disease is generally sudden onset of pain and edema in the limb.
  - Risk factors include age >40, obesity, pregnancy, prolonged immobility, post-surgery, and malignancy among others.

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- Procedures related to veno-occlusive disease include:
  - Thrombolysis
  - Thrombectomy
  - Post-iliac vein stent/angioplasty
- Venous insufficiency
  - Types of venous insufficiency:
    - Superficial and deep venous reflux
    - Varicose veins
    - Reticular and spider veins.
  - Signs/symptoms of venous insufficiency include:
    - Chronic swelling in the leg that is relieved with elevation
    - Chronic swelling in the leg that is worse in the evenings
    - Aching or sense of heaviness in the leg
    - Hyperpigmentation of the calf particularly around the ankle
    - Itchy skin on legs and feet
    - Leather appearance of the skin of the calves
    - Skin ulcers in the calf particularly around the medial malleolus
    - Varicose veins
    - Spider veins/reticular veins/telangiectasias
  - Procedures related to the venous insufficiency include:
    - Endovenous laser ablation utilizing either chemical, laser or radio-frequency
    - Saphenous vein high ligation and stripping
    - Phlebectomy, stab or powered
    - Sclerotherapy, liquid or foam
- Venous malformations
  - Types of venous malformations include:
    - Arterio-venous malformations which can occur throughout the body
    - See **Pulmonary AVM (CH-24)** in the Chest imaging guidelines
    - See **Aneurysm and AVM (HD-12)** in the Head imaging guidelines
    - See **Pelvic Pain/Dyspareunia (PV-11)** in the Pelvic imaging guidelines
    - Klippel-Trenaunay which affects primarily the lower extremity venous circulation and is characterized by varicose veins, limb size discrepancies, and port-wine stains.
  - Treatment includes:
    - Primarily embolization
    - Sclerotherapy
      - Klippel-Trenaunay: treatment can include phlebectomy and sclerotherapy of symptomatic varicose veins provided they meet the criteria for intervention.

General Information

- Risk factors for vascular disease include:
  - Diabetes
  - Cigarette smoking
  - Hypertension
  - Hyperlipidemia
  - Age >50, with at least one risk factor, are considered “at risk” for vascular disease
  - See also: **Impotence/Erectile Dysfunction (PV-17)** in the Pelvis Imaging Guidelines.
- Signs and symptoms of peripheral arterial disease
  - Claudication (cramping pain in the legs, most notably back of the calves but can involve hips or thighs, after walking which is relieved with rest but recurs at a predictable distance)
    - Symptoms that are not consistent with claudication include
      - Generalized leg pain
      - Nocturnal cramps
      - Pain that is not easily relieved after a few minutes of rest
      - Burning pain in feet
  - Critical limb ischemia
    - Rest pain: Pain in the foot (not leg) at rest, particularly at night when the leg is elevated. Pain is relieved by dangling the leg off the bed or moving to an upright position.
    - Non-healing wounds: Wounds present for >2 weeks with little to no evidence of healing
  - Erectile dysfunction can be associated with vascular disease.
- Claudication and critical limb ischemia have different natural histories. Claudication generally follows a benign indolent course. 70% of individuals with claudication will have the same symptoms after five years with no progression. Critical limb ischemia, on the other hand, is associated with a high rate of limb loss (25%) and death (35%) one year after presentation
- Simultaneous venous and arterial systems evaluation are unusual but are occasionally needed.
- Post-angioplasty/reconstruction: follow-up imaging is principally guided by symptoms. See also:
  - **Post Aortic Endovascular/Open Surgery Surveillance Studies (PVD-6.8)**
  - **Post-procedure Surveillance Studies (PVD-7.3)**

General Guidelines – Imaging

- Imaging Studies:
  - Carotid studies MRA Neck CPT® 70543) or CTA Neck (CPT® 70498) capture the area from the top of the aortic arch (includes the origin of the innominate artery, common carotid artery, and subclavian artery, which gives off the vertebral artery) to the base of the skull.
  - CTA or MRA Abdomen (CPT® 74175 or CPT® 74185) images from the diaphragm to the umbilicus or iliac crest.
  - CTA or MRA Chest (CPT® 71275 or CPT® 71555) images from the base of the neck to the dome of the liver.
  - Runoff studies (CPT® 75635 for CTA or CPT® 74185, CPT® 73725, and CPT® 73725 for MRA) image from the umbilicus to the feet.
    - CTA Abdomen and lower extremities should be reported as CPT® 75635, rather than using the individual CPT® codes for the abdomen, pelvis, and legs.
    - MRA Abdomen, MRA Pelvis and MRA Lower extremities should be reported as CPT® 74185, CPT® 73725, and CPT® 73725. The CPT® code for MRA Pelvis (CPT® 72198) should not be included in this circumstance.

Quantification of plaque morphology

CPT® 0710T, CPT® 0711T, CPT® 0712T, CPT® 0713T

There is insufficient evidence to support the routine use of data from non-coronary computed tomography angiography (CTA) to quantify plaque morphology in noncoronary vessels. These studies are considered experimental, investigational, or unproven (Guo et al., 2025).

Procedure Coding

Code	Description
0711T	Noninvasive arterial plaque analysis using software processing of data from non-coronary computerized tomography angiography; data preparation and transmission

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Code	Description
0712T	Noninvasive arterial plaque analysis using software processing of data from non-coronary computerized tomography angiography; quantification of the structure and composition of the vessel wall and assessment for lipid-rich necrotic core plaque to assess atherosclerotic plaque stability
0713T	Noninvasive arterial plaque analysis using software processing of data from non-coronary computerized tomography angiography; data review, interpretation and report

Paragraph

CPT®	Description
93888	Transcranial Doppler study of the intracranial arteries; limited study
93893	Transcranial Doppler study of the intracranial arteries; emboli detection with intravenous microbubble injection

CPT®	Description
93985	Duplex scan of arterial inflow and venous outflow for preoperative vessel assessment prior to creation of hemodialysis access; complete bilateral study
93986	Duplex scan of arterial inflow and venous outflow for preoperative vessel assessment prior to creation of hemodialysis access; complete unilateral study

Nuclear Medicine Imaging Indications

Criteria

- Nuclear medicine studies are rarely used in the evaluation of peripheral vascular disorders but are considered medically necessary in the following circumstances:
  - Lymphoscintigraphy (CPT® 78195) for evaluation of lower extremity lymphedema when recent Doppler ultrasound of the lower extremity and abdomen are negative for valvular insufficiency
  - Indium 111 (^{111}In)–labeled white blood cell (WBC) or Gallium-67 citrate studies (CPT® 78800, CPT® 78801, CPT® 78802, or CPT® 78803) for evaluation of **any** of the following:
    - Mycotic aneurysms
    - Vascular graft infection
    - Infection of central venous catheter or other indwelling device
  - PET/CT (CPT® 78815) for clinical suspicion of aortic infection (graft or native aorta) when **both** of the following apply:
    - CT-angiogram is equivocal/indeterminate AND
    - Indium-111 or Gallium-67 studies have not been performed **and** are not available or not technically feasible.

Non-indications

Evidence does not support routine use of these studies for peripheral vascular evaluation. MRA, CTA, and duplex ultrasonography provide superior diagnostic value more likely to impact clinical management. Therefore, these studies are considered not medically necessary for any peripheral vascular imaging indication:

- Venous thrombosis imaging (CPT® 78456, CPT® 78457, and CPT® 75458)
- Vascular flow imaging (CPT® 78445)

Codes for Nuclear Medicine Imaging

CPT	Description
78195	Positron emission tomography (PET) with concurrently acquired computed tomography (CT) for attenuation correction and anatomical localization; limited area (e.g., skull base to mid-thigh)
78800	Radiopharmaceutical localization of tumor or distribution of radiopharmaceutical agent(s); limited area (e.g., single area imaging).
78801	Radiopharmaceutical localization of tumor or distribution of radiopharmaceutical agent(s); multiple areas.
78802	Radiopharmaceutical localization of tumor or distribution of radiopharmaceutical agent(s); whole body

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CPT	Description
78803	Radiopharmaceutical localization of tumor or distribution of radiopharmaceutical agent(s); tomographic (SPECT).
78815	Positron emission tomography (PET), with concurrently acquired computed tomography (CT) for attenuation correction and anatomic localization imaging; limited area (e.g., skull base to mid-thigh).
78456	Acute venous thrombosis imaging, pulmonary (includes ventilation and perfusion imaging when performed).
78457	Acute venous thrombosis imaging, pulmonary; nonimaging (e.g., probe-based), includes data acquisition, interpretation, and report.
78458	Acute venous thrombosis imaging, pulmonary; quantitative.
78445	Thyroid imaging with uptake; single determination.

Health Equity Considerations

Health equity is the highest level of health for all individuals; health inequity is the avoidable difference in health status or distribution of health resources due to the social conditions in which individuals are born, grow, live, work, and age. Social determinants of health are the conditions in the environment that affect a wide range of health, functioning, and quality of life outcomes and risks. Examples include the following: safe housing, transportation, and neighborhoods; racism, discrimination, and violence; education, job opportunities, and income; access to nutritious foods and physical activity opportunities; access to clean air and water; and language and literacy skills.

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Genetic Predisposition to Arterial Disease

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Screening for Peripheral Artery / Aneurysmal Disease (PVD-2)

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Asymptomatic Screening (PVD-2.1)

Criteria

- Routine screening of asymptomatic individuals for PAD is considered not medically necessary. Those with CVD risk factors should be placed on best medical management and should be questioned on symptoms of PAD at annual physicals.
- Currently, there is no evidence to demonstrate that screening all individuals with PAD for asymptomatic atherosclerosis in other arterial beds improves clinical outcome.
- Resting ABI's may be considered medically necessary in individuals with abnormal pulse exams.
- Screening in the presence of aortic aneurysms:
  - In an individual with a known TAA, screening for AAA is considered medically necessary with an abdominal duplex. See **Abdominal Aortic Aneurysm (AAA) (PVD-6.3)**.
  - In an individual with a known AAA, screening for TAA is not supported by sufficient evidence and is considered not medically necessary.

Evidence Discussion

Screening for Suspected Peripheral Artery Disease/Aneurysmal Disease

Generally, routine screening for peripheral arterial disease in asymptomatic patients is not cost-effective and has not been shown to improve patient outcomes. There are some familial and genetic conditions that may predispose individuals to aneurysmal disease and dissection. In these cases, surveillance imaging has been shown to improve early detection and intervention when indicated. Conditions that may have an elevated risk for vascular disease include:

- Familial Aneurysm Syndromes
- Fibromuscular Dysplasia
- Spontaneous Coronary Artery Dissection (SCAD)
- Ehlers-Danlos
- Marfan
- Loeys-Dietz

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In the case of aneurysms detected in patients with SCAD, Marfan, Loeys-Dietz and Ehlers-Danlos Type IV syndromes, a more frequent surveillance pattern along with additional anatomic region imaging may be considered medically necessary as these syndromes demonstrate a higher incidence of aneurysm development and degeneration. Intervention recommendations follow general guidelines for thoracic aortic, abdominal aortic and visceral artery aneurysms once detected.

While duplex imaging remains an effective modality for abdominal aortic surveillance, these conditions often involve the thoracic aorta as well as cerebrovascular and visceral vessel abnormalities that may be technically limited with this approach. Due to the high incidence of aneurysm development in multiple anatomic locations, CT/MR imaging is recommended for surveillance in this population for cases with indeterminate ultrasound imaging.

There is an association between bicuspid aortic valve and thoracic aneurysm development. Individuals diagnosed with this condition should undergo screening and follow standard surveillance patterns using CT/MR of the chest as well as echocardiography should a thoracic aortic aneurysm be detected. The addition of cardiac-specific CT/MR has not shown benefit in these cases as the pathology is usually noted within the aorta.

Multisystemic Smooth Muscle Syndrome [MSMS], Smooth Muscle Dysfunction Syndrome [SMDS] and ACATA2 mutations have a high incidence of aneurysm development early in life and should undergo screening and routine surveillance after genetic confirmation. To minimize radiation exposure in this pediatric population, MR and ultrasound imaging are recommended when possible.

Screening for Vascular Related Genetic Connective Tissue Disorders (PVD-2.2)

Vascular related genetic connective tissue Disorders include:

- Familial Aneurysm Syndromes
- Fibromuscular Dysplasia
- Spontaneous Coronary Artery Dissection (SCAD)
- Ehlers-Danlos
- Marfan
- Loeys-Dietz

Table of Thoracic Aorta Imaging Options

CPT®	Description
71250	Computed tomography, thorax, diagnostic; without contrast material

CPT®	Description
71260	Computed tomography, thorax, diagnostic; with contrast material(s)
71275	Computed tomographic angiography, chest (noncoronary), with contrast material(s), including noncontrast images, if performed, and image postprocessing
71555	Magnetic resonance angiography, chest (excluding myocardium), with or without contrast material(s)
93306	Echocardiography, transthoracic, real-time with image documentation (2d), includes m-mode recording, when performed, complete, with Spectral doppler echocardiography, and with color flow doppler echocardiography

CPT®	Description
70496	Computed tomographic angiography, head, with contrast material(s), including noncontrast images, if performed, and image postprocessing
70498	Computed tomographic angiography, neck, with contrast material(s), including noncontrast images, if performed, and image postprocessing
70471	Computed tomographic angiography (CTA), head and neck, with contrast material(s), including noncontrast images, when performed, and image postprocessing
74174	Computed tomographic angiography, abdomen and pelvis, with contrast material(s), including noncontrast images, if performed, and image postprocessing
70544	Magnetic resonance angiography, head; without contrast material(s)
70545	Magnetic resonance angiography, head; with contrast material(s)
70546	Magnetic resonance angiography, head; without contrast material(s), followed by contrast material(s) and further sequences
70548	Magnetic resonance angiography, neck; with contrast material(s)
70549	Magnetic resonance angiography, neck; without contrast material(s), followed by contrast material(s) and further sequences
74185	Magnetic resonance angiography, abdomen, with or without contrast materials
72198	Magnetic resonance angiography, pelvis, with or without contrast materials

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Criteria

Screening for Vascular Abnormalities In Suspected or Known Familial Syndromes

- Aneurysm screening is considered medically necessary in individuals with a positive family history of Familial Syndromes (1st degree relative with dissection/TAA) but no known genetic syndrome/mutation, otherwise known as Suspected Familial Aneurysm Syndrome as follows:
  - ECHO and chest x-ray for all 1st-degree relatives (parents, siblings, children) of individuals with TAA and/or dissection
  - Any imaging listed in the **Table of Thoracic Aorta Imaging Options** is considered medically necessary if these studies identify a TAA, are equivocal, or do not visualize the ascending or descending aorta adequately.
  - Studies can be repeated at 2 year intervals if prior results are negative.
- Aneurysm screening for individuals with a known and documented genetic syndrome/mutation, specifically SCAD/fibromuscular dysplasia/Marfan/Loeys-Dietz/Ehlers-Danlos type IV, imaging is considered medically necessary as follows:
  - On initial diagnosis of Ehlers-Danlos, Loeys-Dietz, Marfan, SCAD, or suspicion of fibromuscular dysplasia, full vascular imaging from head to pelvis with:
    - CTA or MRA Head, and CTA or MRA Neck, or CTA Head and Neck
    - CTA or MRA Chest or CT Chest with contrast,and/or Echocardiogram
    - CTA Abdomen/Pelvis or MRA Abdomen/Pelvis
  - For individuals with Loey-Dietz or Marfan's syndrome, an additional TTE can be obtained 6 months after the initial imaging to determine aortic root and ascending aortic stability.
  - Repeat imaging is considered medically necessary at two-year intervals if there are no identified aneurysms or dissections on initial imaging.

Surveillance for Vascular Abnormalities In Suspected or Known Familial Syndromes

Surveillance imaging for identified aneurysms is considered medically necessary as follows:

- Fibromuscular dysplasia: aneurysm surveillance per the typical time-frame as described in **Thoracic Aortic Aneurysm (TAA) (PVD-6.2)**, **Abdominal Aortic Aneurysm (AAA) (PVD-6.3)**, **Iliac Artery Aneurysm (IAA) (PVD-6.4)**, and **Visceral Artery Aneurysm (PVD-6.5)**.
- SCAD/Marfan/Loeys-Dietz/Ehlers-Danlos type IV:
  - Imaging is considered medically necessary every 6 months once an aneurysm has been identified until a decision has been made to repair.
    - Intracranial aneurysm – CTA or MRA Head

- Aneurysm of a cervical artery – Carotid duplex or CTA or MRA neck if unable to fully visualize with carotid duplex
- Thoracic aorta – CTA Chest or CT Chest with contrast or without , MRA chest
- Abdominal aneurysm – Abdominal duplex (CPT® 93975/93976/93978/93979/76770/76775)
- Visceral aneurysm – These can be difficult to visualize on duplex. If not visible on duplex, can obtain a CTA or MRA Abdomen and Pelvis.

Background and Supporting Information

Fibromuscular dysplasia and spontaneous coronary artery dissection is diagnosed radiographically. Loeys-Dietz, Marfan, Ehlers-Danlos type IV are diagnosed with genetic testing.

Evidence Discussion

Screening for Vascular Related Genetic Connective Tissue Disorders

Generally, routine screening for peripheral arterial disease in asymptomatic patients is not cost-effective and has not been shown to improve patient outcomes. There are some familial and genetic conditions that may predispose individuals to aneurysmal disease and dissection. In these cases, surveillance imaging has been shown to improve early detection and intervention when indicated. Conditions that may have an elevated risk for vascular disease include:

- Familial Aneurysm Syndromes
- Fibromuscular Dysplasia
- Spontaneous Coronary Artery Dissection (SCAD)
- Ehlers-Danlos
- Marfan
- Loeys-Dietz

In the case of aneurysms detected in patients with SCAD, Marfan, Loeys-Dietz and Ehlers-Danlos Type IV syndromes, a more frequent surveillance pattern along with additional anatomic region imaging may be indicated as these syndromes demonstrate a higher incidence of aneurysm development and degeneration (Schoenhoff et al., 2013; Andras & Ferket,2014). Intervention recommendations follow general guidelines for thoracic aortic, abdominal aortic and visceral artery aneurysms once detected.

While duplex imaging remains an effective modality for abdominal aortic surveillance, these conditions often involve the thoracic aorta as well as cerebrovascular and visceral vessel abnormalities that may be technically limited with this approach. Due to the high incidence of aneurysm development in multiple anatomic locations,

CT/MR imaging is recommended for surveillance in this population for cases with indeterminate ultrasound imaging.

Screening for TAA with Bicuspid Aortic Valves (PVD-2.3)

Table of Thoracic Aorta Imaging Options

CPT®	Description
71250	Computed tomography, thorax, diagnostic; without contrast material
71260	Computed tomography, thorax, diagnostic; with contrast material(s)
71275	Computed tomographic angiography, chest (noncoronary), with contrast material(s), including noncontrast images, if performed, and image postprocessing
71555	Magnetic resonance angiography, chest (excluding myocardium), with or without contrast material(s)
93306	Echocardiography, transthoracic, real-time with image documentation (2d), includes m-mode recording, when performed, complete, with Spectral doppler echocardiography, and with color flow doppler echocardiography

Criteria

Screening

- Screening is considered medically necessary in individuals with bicuspid aortic valve:
  - Any requested imaging from the **Table of Thoracic Aorta Imaging Options** and/or ECHO (CPT® 93306, CPT® 93307, or CPT® 93308) may be used for screening
  - First-degree relatives of individuals with bicuspid aortic valve may be screened for TAAFollow-up per TAA Follow-up guidelines in **Thoracic Aortic Aneurysm (TAA) (PVD-6.2)**

Surveillance

For surveillance imaging for no identified aneurysm/dilatation, see **Frequency of Echocardiography Testing (CD-2.3).**

Evidence Discussion

Screening for TAA with Bicuspid Aortic Valves

There is an association between bicuspid aortic valve and thoracic aneurysm development. Individuals diagnosed with this condition should undergo screening and follow standard surveillance patterns using CT/MR of the chest as well as

echocardiography should a thoracic aortic aneurysm be detected. The addition of cardiac-specific CT/MR has not shown benefit in these cases as the pathology is usually noted within the aorta. If initial imaging is negative for aortic pathology, additional lifetime surveillance imaging is supported with echocardiography.

Screening for Vascular Related Disorders in ACTA2 Mutations (PVD 2.4)

Criteria

Screening for Vascular Related Disorders in Multisystemic Smooth Muscle Syndrome (MSMS)/Smooth Muscle Dysfunction Syndrome (SMDS)/ACTA2 Mutations

Initial imaging

Upon initial genetic confirmation, all of the following studies are considered medically necessary:

- Transthoracic echocardiogram (TTE)
- MRA Chest or CTA Chest and CT Chest with contrast
- MRA Abdomen and Pelvis (CPT® 74185 and 72198) or CTA Abdomen and Pelvis (CPT® 74174)
- MRI Perfusion study Brain CPT® 70553
- MRA Head and Neck (CPT® 70544 or 70545 AND 70548)
- Ultrasound Upper extremity(ies) (CPT® 93930 or 93931) or CTA Upper extremity (CPT® 73206) or MRA Upper extremity (CPT® 73225)

Repeat testing

Repeat testing with any of the studies listed under initial imaging is considered medically necessary when there is documentation of new signs or symptoms.

Surveillance imaging

Surveillance imaging with any of the studies listed in initial imaging is considered medically necessary according to the following:

- Transthoracic echocardiogram can be repeated every 6 months.
- Chest imaging can be repeated every 12 months starting at age 10.
- Abdomen and pelvis imaging can be repeated every 12 months starting age 10.
- Upper extremity imaging can be repeated every 12 months starting age 10.
- MRI perfusion study Brain see **Dysfunction Syndrome (SMDS)/ACTA2 Mutations (PEDHD-12.8)**

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- MRA Head and Neck see **Dysfunction Syndrome (SMDS)/ACTA2 Mutations (PEDHD-12.8)**

Background and Supporting Information

Smooth Muscle Dysfunction Syndrome presents as congenital mydriasis, a patent ductus arteriosus (PDA), pulmonary arterial hypertension (PAH) during infancy. Patients go on to developed aortic, peripheral arterial, and cerebrovascular disorders in childhood.

- Caused by heterozygous mutation of ACTA2. P.Arg179His
- Cases mostly due to de novo mutations, so imaging screening based on family history without genetic confirmation is not supported.
- Because radiation is a known risk factor for moyamoya disease, MRI/MRA Head is recommended instead of Computed Tomography (CT)/CTA.

Evidence Discussion

Screening for Vascular Related Disorders in Multisystemic Smooth Muscle Syndrome (MSMS)/Smooth Muscle Dysfunction Syndrome (SMDS)/ACTA2 Mutations

Multisystemic Smooth Muscle Syndrome [MSMS], Smooth Muscle Dysfunction Syndrome [SMDS] and ACATA2 mutations have a high incidence of aneurysm development early in life and should undergo screening and routine surveillance after genetic confirmation. To minimize radiation exposure in this pediatric population, MR and ultrasound imaging are recommended when possible.

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Cerebrovascular Imaging

Guideline Page

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Cerebrovascular and Carotid Disease - Initial Imaging (PVD-3.1)

PVD.CV.0003.1.A
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CPT®	Description
70471	Computed tomographic angiography (CTA), head and neck, with contrast material(s), including noncontrast images, when performed, and image postprocessing
70496	Computed tomographic angiography, head, with contrast material(s), including noncontrast images, if performed, and image postprocessing
70498	Computed tomographic angiography, neck, with contrast material(s), including noncontrast images, if performed, and image postprocessing
70544	Magnetic resonance angiography, head; without contrast material(s)
70545	Magnetic resonance angiography, head; with contrast material(s)
70546	Magnetic resonance angiography, head; without contrast material(s), followed by contrast material(s) and further sequences
70547	Magnetic resonance angiography, neck; without contrast material(s)
70548	Magnetic resonance angiography, neck; with contrast material(s)
70549	Magnetic resonance angiography, neck; without contrast material(s), followed by contrast material(s) and further sequences

Criteria

- Duplex ultrasound (CPT® 93880 bilateral or CPT® 93882 unilateral) is considered medically necessary to evaluate possible carotid artery disease, prior to considering advanced imaging, when ANY of the following apply:
  - Known or suspected retinal arterial emboli or Hollenhorst plaque
  - Pulsatile neck masses
  - Carotid or cervical bruit
  - Abnormal findings on physical exam of the carotid arteries (e.g., absent carotid pulses)
  - Pre-operative evaluation of individuals with evidence of severe diffuse atherosclerosis, scheduled for major cardiovascular surgical procedures

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  - Pre-operative evaluation of individuals prior to elective cardiovascular surgery in individuals older than 65 years of age and in those with peripheral artery disease, history of cigarette smoking, history of stroke or TIA, or carotid bruit
  - Suspected Subclavian Steal Syndrome for additional imaging see **Upper Extremity PVD – Imaging (PVD-4.1)**
  - Blunt neck trauma in the absence of focal neurological symptoms
  - Neurologic complaints after chiropractic neck manipulation
  - Vasculitis potentially involving carotid arteries, such as Takayasu's arteritis and fibromuscular dysplasia (FMD)
  - Remote history of stroke or TIA (greater than one month).
- CTA or MRA Neck is considered medically necessary to evaluate suspected internal carotid artery dissection, in individuals with **any** of the following mechanisms of injury or risk factors for arterial dissection:
  - Chiropractic manipulation of neck
  - Whiplash injury
  - Fibromuscular dysplasia/Marfan
  - Stroke in the young (age ≤50)
- CTA or MRA Neck is considered medically necessary to evaluate suspected vertebrobasilar pathology:
  - Symptoms include:
    - Vertigo associated with nausea and vomiting
    - Diplopia
    - Loss of vision in one or both eyes
    - Dysarthria
    - Bifacial numbness
    - Bilateral extremity weakness and/or numbness
    - Acute changes in mental status
    - Loss of consciousness
    - Ataxia
  - MRA or CTA of **both** Neck and Head are required to visualize the entire vertebral-basilar system for evaluation of posterior circulation disease.
  - Surveillance imaging, post-stenting or known vertebrobasilar disease, interval determined by Vascular Specialist, Neurologist, or Neurosurgeon or any provider in consultation with a vascular specialist, neurologist, or neurosurgeon for ANY of the following:
    - Asymptomatic
    - Unchanged symptoms
    - New or worsening symptoms
- After Intracranial Hemorrhage:

  - Initial Imaging see **Head Trauma (HD-13.1)** in the Head Imaging Guidelines
  - Surveillance Imaging
    - Interval determined by neurosurgeon or neurologist or any provider in consultation with a neurologist or neurosurgeon.
- Carotid ultrasound screening in asymptomatic individuals due only to risk factors is considered **not** medically necessary.
- Repeat imaging of the cervical vessels (regardless of when the previous carotid imaging was performed) is considered medically necessary for new signs and symptoms consistent with carotid artery disease (e.g., TIA, amaurosis fugax, change in nature of a carotid bruit) using one of the following:
  - Duplex ultrasound (CPT® 93880 bilateral study or CPT® 93882 unilateral study)
  - MRA Neck with contrast or without and with contrast
  - CTA Neck

Evidence Discussion

Cerebrovascular and Carotid Disease- Initial Imaging

Indications for carotid artery imaging are suspicion for carotid stenosis, aneurysm, dissection or vasculitis. The signs and symptoms generally accepted for carotid imaging are listed in the guideline.

Standard first line imaging is the Duplex ultrasound (DU). This study obtains gray-scale pictures, as well as velocity and direction of blood flow in the vessels. The combination of B mode and Doppler techniques allows for detection of all of the above mentioned pathologies. DU has limitations in evaluation of the vertebral artery origins as well as extent of carotid dissection. Therefore, if there is concern for either vertebrobasilar insufficiency or carotid dissection, CT angiography (CTA) or MR angiography (MRA) is supported.

However, DU has become the first-line imaging modality for identifying patients with internal carotid artery stenosis. In part, this is because consensus ultrasound criteria have been developed to standardize carotid ultrasound examinations and categorize carotid artery stenosis severity. The rationale for use of DU is its low cost, availability, and high sensitivity and specificity. It avoids exposure to radiation and intravenous contrast agents as well.

CTA and MRA have more limited use for screening due to the risks associated with them. CTA risks include intravenous contrast and radiation exposure. Contrast complications include allergy and contrast induced nephropathy. MRA risk is related to gadolinium contrast with rare allergic type reactions. The risk of developing nephrogenic systemic fibrosis has diminished very significantly in patients with renal insufficiency with the use of the Group II contrast agents. MRA may be contraindicated in some patients with metallic implants which should be judged on a case by case basis based on local

protocols. Additionally, both CTA and MRA are not appropriate for screening purposes, due to their considerable costs.

It is well established that for carotid stenosis 70-99% in an asymptomatic patient, or 50-99% stenosis in a symptomatic patient, there is a role for carotid intervention for stroke prevention. Once duplex identifies this degree of stenosis, CTA/MRA is medically necessary for pre-procedure planning. Additionally, CTA/MRA is medically necessary for patients undergoing evaluation for carotid artery stenting (CAS) as delineation of relevant anatomy is necessary for procedural success.

PVD Imaging Guidelines

Surveillance Imaging with NO History of Carotid Surgery or Intervention (PVD-3.2)

PVD.CV.0003.2.A
v1.0.2027

Criteria

- Surveillance imaging is considered medically necessary once a year for individuals with fibromuscular dysplasia of the extracranial internal carotid arteries.
- Reporting standards for carotid stenosis varies widely. The most commonly used criteria, however, is noted in the chart below published by the Society of Radiologists in Ultrasound Consensus Statement in 2003.

Primary parameters			Additional Parameters	
% Stenosis	ICA PSV (cm/sec)	Plaque estimate (%)	ICA/CCA PSV ratio	ICA/EDV (cm/sec)
Normal	< 125	None	< 2.0	< 40
< 50	< 125	< 50	< 2.0	< 40
50-69	125-230	≥ 50	2.0-4.0	40-100
≥ 70 but less than near occlusion	> 230	> 50	> 4.0	> 100
Near occlusion	High, low, or undetectable	Visible	Variable	Variable
Total occlusion	Undetectable	Visible- no detectable lesion	Not applicable	Not applicable

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CPT®	Description
70471	Computed tomographic angiography (CTA), head and neck, with contrast material(s), including noncontrast images, when performed, and image postprocessing
70496	Computed tomographic angiography, head, with contrast material(s), including noncontrast images, if performed, and image postprocessing
70498	Computed tomographic angiography, neck, with contrast material(s), including noncontrast images, if performed, and image postprocessing
93880	Duplex Ultrasound, bilateral
93882	Duplex Ultrasound, unilateral
70544	Magnetic resonance angiography, head; without contrast material(s)
70545	Magnetic resonance angiography, head; with contrast material(s)
70546	Magnetic resonance angiography, head; without contrast material(s), followed by contrast material(s) and further sequences
70547	Magnetic resonance angiography, neck; without contrast material(s)
70548	Magnetic resonance angiography, neck; with contrast material(s)
70549	Magnetic resonance angiography, neck; without contrast material(s), followed by contrast material(s) and further sequences

- If normal study, no routine follow-up imaging is considered medically necessary.
- If <50% internal carotid stenosis
  - Duplex ultrasound is considered medically necessary every **two** years.
- Between 50% and 70% internal carotid stenosis
  - Duplex ultrasound is considered medically necessary annually.
  - A repeat duplex is considered medically necessary in three to six months until stability is reached when **one** of the following occurs:
    - Change in the character of the bruit
    - Duplex demonstrates rapid progression, including:
      - Doubling of peak systolic velocities in the internal carotid arteries
      - Increase of the ICA/CCA ratio
      - Heavy calcification in the internal carotid arteries
      - Thrombus in the internal carotid arteries
      - Ulcerated plaque in the internal carotid arteries
      - Echolucent plaque in the internal carotid arteries

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  - A one-time CTA Neck (CPT® 70498) or MRA Neck is considered medically necessary to confirm degree of stenosis in individuals with ulcerated plaque or heavy calcification of the internal carotid artery seen on duplex.
- Internal carotid stenosis ≥70% or ICA/CCA ratio >4
  - Duplex ultrasound or MRA Neck with contrast or CTA Neck is considered medically necessary at the following intervals:
    - Every 6 months until one of the following occurs:
      - Intervention is performed.
      - Decision is made to not intervene.
- MRA Neck with contrast or CTA Neck is considered medically necessary if duplex Ultrasound shows ≥70% occlusion/stenosis of the internal carotid artery or the ICA/CCA ratio is >4.0, even with a lower percentage of stenosis.
  - If carotid stent is planned, MRA Head or CTA Head can be added.

Evidence Discussion

Surveillance Imaging with NO History of Carotid Surgery or Intervention

DU is established as the primary diagnostic test for carotid surveillance imaging. Consensus statements have established the appropriate time intervals for repeat imaging. If however, there are new symptoms or physical findings, repeat duplex imaging is supported, regardless of time interval. If at any time there is >70% re-stenosis, CTA or MRA is indicated.

Surveillance Imaging WITH History of Carotid Surgery or Intervention (PVD-3.3)

PVD.CV.0003.3.A
v1.0.2027

Criteria

- Duplex ultrasound (CPT® 93880 bilateral or CPT® 93882 unilateral) is considered medically necessary post-carotid surgery or intervention at the following intervals:
  - 1 month after procedure
  - Every 6 months for 2 years after procedure
  - Then annually
- If ≥70% residual internal carotid stenosis is seen on duplex at 1 month after procedure
  - Duplex ultrasound (CPT® 93880 bilateral or CPT® 93882 unilateral) or CTA Neck (CPT® 70498) or MRA Neck (CPT® 70548) is considered medically necessary at the following intervals:
    - Every 3-6 months for one year
    - Then annually or until decision is made to re-intervene
- If ≥70% residual internal carotid stenosis is seen on duplex at any time post-procedure, then
  - CTA Neck (CPT® 70498) or MRA Neck (CPT® 70548) is considered medically necessary for further evaluation and at six-month intervals until decision is made to re-intervene.

Background and Supporting Information

- MRA Neck (CPT® 70548) or CTA Neck (CPT® 70498) may be medically necessary if ultrasound is technically difficult or confirmation of the degree of stenosis on ultrasound is needed because an interventional procedure is being considered

Evidence Discussion

Surveillance Imaging WITH History of Carotid Surgery or Intervention

As described in PVD 3.1, Duplex Ultrasound is established as the primary diagnostic test for carotid surveillance imaging. Consensus statements have established the appropriate time intervals for repeat imaging. If however, there are new symptoms or physical findings, repeat duplex imaging is supported, regardless of time interval. If at any time there is >70% re-stenosis, CTA or MRA is indicated.

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Aortic Imaging

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Aortic Disorders General Information (PVD-6.1)

PVD.AD.0006.1.A
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Duplex ultrasound for visceral vascular studies	CPT®
Duplex scan of arterial inflow and venous outflow of abdominal, pelvic, scrotal contents and/or retroperitoneal organs; complete study.	93975
Duplex scan of arterial inflow and venous outflow of abdominal, pelvic, scrotal contents and/or retroperitoneal organs; limited study.	93976
Duplex scan of aorta, inferior vena cava, iliac vasculature, or bypass grafts; complete study.	93978
Duplex scan of aorta, inferior vena cava, iliac vasculature, or bypass grafts; unilateral or limited study.	93979
Ultrasound, abdominal aorta, real time, with image documentation, screening study for abdominal aortic aneurysm (AAA) for AAA screening	76706

Criteria

- In clinical practice, CT, CTA, MRA are considered medically necessary to evaluate for stenosis of these vessels rather than ultrasound (Exception: Duplex ultrasound is considered medically necessary to rule out testicular or ovarian torsion or to evaluate an abdominal bruit or a pulsatile abdominal mass).
- Mesenteric Ischemia
  - See **Mesenteric/Colonic Ischemia (AB-6)** in the Abdomen Imaging Guidelines.

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Thoracic Aortic Aneurysm (TAA) (PVD-6.2)

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TAA Imaging Indications

Table of Thoracic Aorta Imaging Options

CPT®	Description
71250	Computed tomography, thorax, diagnostic; without contrast material
71260	Computed tomography, thorax, diagnostic; with contrast material(s)
71275	Computed tomographic angiography, chest (noncoronary), with contrast material(s), including noncontrast images, if performed, and image postprocessing
71555	Magnetic resonance angiography, chest (excluding myocardium), with or without contrast material(s)
93306	Echocardiography, transthoracic, real-time with image documentation (2d), includes m-mode recording, when performed, complete, with Spectral doppler echocardiography, and with color flow doppler echocardiography

Criteria

Imaging of the thoracic aorta listed in the table above is considered medically necessary as follows:

- For suspected TAA, any requested imaging from the **Table of Thoracic Aorta Imaging Options** above is considered medically necessary for the following:
  - Abnormalities identified on chest x-ray (abnormality including widened mediastinum, suspicious calcification) or other imaging studies (fluoroscopy, MRI Spine, etc.) abnormality
- Imaging for known thoracic aortic aneurysm can be chosen from the Table of Thoracic Aorta Imaging Options above
- For screening of TAA, see **Screening for Vascular related genetic connective tissue Disorders (PVD-2.2)**

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- For TAA associated with a dissection, see **Aortic and Arterial Dissection and Other Aortic Conditions (PVD-6.7)**
- For known TAA accompanied with chest pain or back pain and suspicion of rupture, any requested imaging from the Table of Thoracic Aorta Imaging Options above
- For thoracic endovascular aortic repair (TEVAR) of thoracic aorta disease either of the following is considered medically necessary:
  - CTA Chest, and/or Abdomen, and/or Pelvis (CPT® 71275, CPT® 74175, CPT® 72191, CPT® 74174)
  - MRA Chest, and/or Abdomen, and/or Pelvis (CPT® 71555, CPT® 74185, CPT® 72198)
- For follow-up of dilated aortic root or ascending aortic aneurysms, any requested imaging from the Table of Thoracic Aorta Imaging Options above is considered medically necessary for the following:
  - For individuals with dilated aortic root or ascending aortic aneurysms <4.0 cm in diameter
    - Repeat imaging annually.
  - For individuals with dilated aortic root or ascending aortic aneurysms ≥4.0 cm
    - Repeat imaging 6 months.
  - TEE is considered medically necessary **only** when imaging with CT or MR is contraindicated.
- For follow-up of descending aortic aneurysms, any requested imaging from the **Table of Thoracic Aorta Imaging Options** above for the following:
  - Medically treated/observation.
    - 3.5cm to 4.4cm TAA can be followed annually.
    - ≥4.5cm TAA can be followed every 6 months.
    - ≥3.0cm TAA when there is concern for growth can have a one-time 3-month interval advanced imaging.
  - TEE is considered medically necessary **only** when imaging with CT or MR is contraindicated.
- Screening in the presence of other aortic aneurysms.
  - In an individual with a known TAA, screening for AAA is considered medically necessary with an abdominal duplex. See **Abdominal Aortic Aneurysm (AAA) (PVD-6.3)**.
  - In an individual with a known AAA, screening for TAA is not supported by sufficient evidence and is considered not medically necessary.
- Screening in individuals with bicuspid aortic valve or familial TAA syndromes. See **Screening for TAA with bicuspid aortic valves (PVD-2.3)**. See **Screening for Vascular related genetic connective tissue Disorders (PVD-2.2)**

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Evidence Discussion

Thoracic aortic aneurysms (TAAs) are progressive vascular dilatations that typically enlarge over time and carry an increased risk of rupture or dissection as diameter expands. Once an aneurysm reaches established size thresholds, the risk of catastrophic complications and associated mortality exceeds that of elective surgical repair. Current American College of Cardiology/American Heart Association (ACC/AHA) guidelines recommend operative intervention for most asymptomatic patients when the diameter of the ascending aorta or aortic arch reaches approximately 5.5 cm, reflecting a critical inflection point in risk–benefit balance (Wang & Desai, 2020; Expert Panel on Vascular Imaging et al., 2018).

Surveillance strategies for ascending and descending TAAs have been well described in major clinical guidelines and cohort studies, emphasizing periodic imaging to assess aneurysm size and growth rate. However, because of the anatomic position of the thoracic aorta within the chest, ultrasonography has limited utility for comprehensive evaluation, particularly for distal segments. As a result, the American College of Radiology (ACR) recommends computed tomography angiography (CTA) or magnetic resonance angiography (MRA) as the most appropriate modalities for diagnosis, surveillance, and preoperative assessment of thoracic aortic disease (Wang & Desai 2020; Expert Panel on Vascular Imaging et al., 2018).

The ACC/AHA further supports the use of transthoracic echocardiography (TTE) for initial evaluation and serial monitoring of the aortic root and proximal ascending aorta, while acknowledging that transesophageal echocardiography (TEE) provides superior visualization of the thoracic aorta when transthoracic imaging windows are inadequate or when more detailed assessment is required (Douglas et al., 2019).

Thoracic aortic aneurysms may occur in isolation but can also extend beyond the diaphragm, to involve the the abdominal aorta. These are considered thoracoabdominal aneurysms. In such cases, abdominal aortic aneurysms should be managed according to their respective surveillance guidelines, although combined imaging is often performed when clinically indicated or during pre-interventional planning. Additionally, patients with heritable connective tissue disorders or familial aortic syndromes have an increased risk of aneurysm formation and progression, necessitating earlier and more frequent imaging surveillance (Wang & Desai, 2020).

Finally, cross-sectional imaging with CT or MR is essential for procedural planning, as most contemporary surgical and endovascular approaches rely on precise anatomic characterization of the entire aorta and its branch vessels (Wang & Desai, 2020).

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Abdominal Aortic Aneurysm (AAA) (PVD-6.3)

PVD.AD.0006.3.A
v1.0.2027

Duplex ultrasound for visceral vascular studies	CPT®
Duplex scan of arterial inflow and venous outflow of abdominal, pelvic, scrotal contents and/or retroperitoneal organs; complete study.	93975
Duplex scan of arterial inflow and venous outflow of abdominal, pelvic, scrotal contents and/or retroperitoneal organs; limited study.	93976
Duplex scan of aorta, inferior vena cava, iliac vasculature, or bypass grafts; complete study.	93978
Duplex scan of aorta, inferior vena cava, iliac vasculature, or bypass grafts; unilateral or limited study.	93979
Ultrasound, abdominal aorta, real time, with image documentation, screening study for abdominal aortic aneurysm (AAA) for AAA screening	76706

Criteria

Screen for AAA

Ultrasound abdominal aorta with any of the studies from the table of Duplex ultrasound for visceral vascular studies is considered medically necessary to screen for AAA as follows:

- One-time screening recommendations for AAA (Ultrasound CPT® 76706)
  - Individuals 65 to 75 years of age with a history of tobacco use
  - Individuals older than 75 years with a history of tobacco use and in otherwise good health who have not previously received a screening ultrasound examination
  - All first-degree relatives of individuals who present with an AAA and are between 65 and 75, or in those older than 75 in good health

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These guidelines apply to services or supplies managed by EviCore for Cigna as outlined by the Cigna CPT list.

- AAA screening is considered medically necessary with ultrasound (CPT® 76706, 93975, 93976, 93978, or 93979) when there is a documented thoracic aortic aneurysm.
- There is insufficient evidence to support the use of ultrasound or advanced imaging to screen for a thoracic aortic aneurysm in individuals with known abdominal aortic aneurysm.

Survey known AAA

Ultrasound abdominal aorta with any of the studies from the table of duplex ultrasound for visceral vascular studies is medically necessary to survey known AAA as follows:

- Surveillance of AAA with duplex ultrasound (CPT® 76706, 93975, 93976, 93978, 93979)
  - >2.5cm but <3.0cm: 5 years
  - 3.0cm to 3.9cm: 3 year intervals
  - 4.0cm to 4.9cm in a male: every 12 months OR 4.0-4.4cm in a female: every 12 months
  - ≥5.0cm in a male OR ≥4.5cm in a female: every 6 months
  - >5.4cm (or aortic diameter has increased in size by 0.5 cm in six months, or at least 1 cm in a year) may undergo more frequent monitoring and should be evaluated by a Vascular Specialist
- Additional imaging is considered medically necessary as follows:
  - CT Abdomen and Pelvis with contrast (CPT® 74177), CT Abdomen and Pelvis without contrast (CPT® 74176), or CTA Abdomen and Pelvis (CPT® 74174), or CTA Abdomen (CPT® 74175), or CTA Pelvis (CPT® 72191).
    - Suspected or known AAA with recent-onset abdominal or back pain, particularly in the presence of a pulsatile epigastric mass or significant risk factors for AAA
    - Pre-operative imaging for AAA repair
    - An inconclusive duplex study due to an individual's anatomy (e.g. body habitus, presence of bowel gas)
- A one-time CTA Chest (CPT® 71275) or CT Chest with contrast (CPT® 71260) is considered medically necessary prior to planned treatment of AAA.

Evaluate a pulsatile abdominal mass

Ultrasound abdominal aorta with any of the studies from the table of Duplex ultrasound for visceral vascular studies is considered medically necessary to evaluate a pulsatile abdominal mass:

- Additional imaging with CT Abdomen and Pelvis with contrast (CPT® 74177), CT Abdomen and Pelvis without contrast (CPT® 74176), CTA Abdomen and Pelvis (CPT® 74174), or CTA Abdomen (CPT® 74175), or CTA Pelvis (CPT® 72191) for either:

- Suspected or known AAA with recent-onset abdominal or back pain, particularly in the presence of a pulsatile epigastric mass or significant risk factors for AAA
- Pre-operative imaging for AAA repair

Evidence Discussion

Abdominal aortic aneurysm (AAA) is a degenerative vascular condition characterized by progressive dilation of the abdominal aorta, most commonly involving the infrarenal segment. AAAs are typically asymptomatic and are most frequently detected incidentally during imaging performed for unrelated indications. Despite their silent presentation, AAAs are clinically significant due to the risk of rupture, which carries a very high mortality rate, with overall survival following rupture estimated at approximately 20% or less (Rescan Collaborators, 2013).

In contrast, symptomatic aneurysms—manifesting as abdominal, back, or flank pain, or a palpable pulsatile abdominal mass—are associated with an increased risk of impending rupture and require urgent evaluation and intervention. Evidence from observational and clinical studies demonstrates that symptomatic aneurysms should generally be repaired promptly due to the substantially elevated rupture risk compared with asymptomatic lesions (Horvath et al., 2022).

Screening for AAA has proven benefit in high-risk populations. The landmark Multicentre Aneurysm Screening Study (MASS) randomized trial demonstrated that ultrasound screening in men aged 65–74 years resulted in a 42% relative reduction in AAA-related mortality over approximately 4 years of follow-up. Long-term follow-up of the same cohort confirmed continued benefit, with sustained reductions in aneurysm-related mortality and modest reductions in all-cause mortality over more than a decade. These findings support targeted screening strategies in populations at elevated risk, particularly older individuals with a history of smoking or other vascular disease. Screening programs rely on the ability of ultrasound to reliably detect aortic dilation, as the modality can visualize the abdominal aorta in nearly all individuals and identify aneurysms (≥3.0 cm) with high accuracy (Thompson et al., 2009).

The natural history of AAA is strongly dependent on aneurysm diameter and growth rate. Small AAAs (3.0–5.4 cm) are generally managed with serial imaging surveillance, as rupture risk at these diameters is relatively low (Rescan Collaborators, 2013).

The RESCAN meta-analysis (JAMA) demonstrated that both aneurysm growth and rupture risk increase progressively with diameter, with rupture risk nearly doubling for every 0.5 cm increase in size. This study also established evidence-based surveillance intervals, showing that longer intervals may be appropriate for smaller aneurysms (e.g., several years for 3.0-cm AAAs), whereas larger aneurysms require more frequent monitoring (Rescan Collaborators, 2013).

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Imaging is central to the diagnosis, surveillance, and management of AAA. Ultrasound is the primary modality for both screening and follow-up due to its safety, accessibility, and cost-effectiveness. It does not expose patients to ionizing radiation or require contrast administration and provides reliable measurements of aneurysm diameter (Rescan Collaborators, 2013).

Meta-analyses have demonstrated that ultrasound has excellent diagnostic accuracy, with pooled sensitivity exceeding 98% and specificity approaching 100% for the detection of AAA. Additionally, newer techniques such as three-dimensional ultrasound show strong agreement with computed tomography (CT) measurements, further supporting its role in longitudinal surveillance (Shaban et al., 2024).

Cross-sectional imaging with CT angiography (CTA) or magnetic resonance angiography (MRA) is typically reserved for preoperative planning or when ultrasound is technically limited. CTA provides detailed three-dimensional visualization of aneurysm morphology, branch vessels, and access anatomy, which is essential for determining suitability for intervention (Chaikof et al., 2018).

Endovascular aneurysm repair (EVAR) has become a widely used treatment for AAA due to its minimally invasive approach and lower perioperative mortality compared with open surgical repair. Randomized controlled trials, including EVAR 1, DREAM, OVER, and ACE, demonstrate a significant early survival advantage with EVAR, largely driven by reduced 30 day mortality (Powell et al., 2017).

Because of these considerations, detailed preprocedural imaging with CTA or MRA is essential to assess anatomic suitability and guide device selection. Furthermore, continued imaging surveillance after EVAR is required to detect complications such as endoleak, graft migration, or aneurysm sac enlargement (Chaikof et al., 2018).

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Dissection

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Aortic and Arterial Dissection and Other Aortic Conditions (PVD-6.7)

PVD.AD.0006.7.A
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Coding

CPT®	Imaging for Aortic conditions
93880	Carotid duplex
70471	Computed tomographic angiography (CTA), head and neck, with contrast material(s), including noncontrast images, when performed, and image postprocessing
70496	Computed tomographic angiography, head, with contrast material(s), including noncontrast images, if performed, and image postprocessing
70498	Computed tomographic angiography, neck, with contrast material(s), including noncontrast images, if performed, and image postprocessing
71260	Computed tomography, thorax, diagnostic; with contrast material(s)
71270	Computed tomography, thorax, diagnostic; without contrast material, followed by contrast material(s) and further sections
71275	Computed tomographic angiography, chest (noncoronary), with contrast material(s), including noncontrast images, if performed, and image postprocessing
74160	Computed tomography, abdomen; with contrast material(s)
74170	Computed tomography, abdomen; without contrast material, followed by contrast material(s) and further sections
74178	Computed tomography, abdomen and pelvis; without contrast material in one or both body regions, followed by contrast material(s) and further sections in one or both body regions
72193	Computed tomography, pelvis; with contrast material(s)
72194	Computed tomography, pelvis; without contrast material, followed by contrast material(s) and further sections

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CPT®	Imaging for Aortic conditions
74174	Computed tomographic angiography, abdomen and pelvis, with contrast material(s), including noncontrast images, if performed, and image postprocessing
74175	Computed tomographic angiography, abdomen, with contrast material(s), including noncontrast images, if performed, and image postprocessing
72191	Computed tomographic angiography, pelvis, with contrast material(s), including noncontrast images, if performed, and image postprocessing
70544	Magnetic resonance angiography, head; without contrast material(s)
70545	Magnetic resonance angiography, head; with contrast material(s)
70546	Magnetic resonance angiography, head; without contrast material(s), followed by contrast material(s) and further sequences
70547	Magnetic resonance angiography, neck; without contrast material(s)
70548	Magnetic resonance angiography, neck; with contrast material(s)
70549	Magnetic resonance angiography, neck; without contrast material(s), followed by contrast material(s) and further sequences
71555	Magnetic resonance angiography, chest (excluding myocardium), with or without contrast material(s)
74185	Magnetic resonance angiography, abdomen, with or without contrast material(s)
72198	Magnetic resonance angiography, pelvis, with or without contrast material(s)

Criteria

CTA or MRA of the entire aorta (including arch branches) and extending through the femoral arteries is medically necessary for suspected acute aortic dissection with any of the following study combinations:

- CT Chest **and/or one of the following:**
  - CT Abdomen with or without and with contrast
  - CT Pelvis with or without and with contrast
  - CT Abdomen and Pelvis with or without and with contrast
- CTA Chest and/or **one** of the following:
  - CTA Abdomen
  - CTA Pelvis
  - CTA Abdomen and Pelvis

- MRA Chest and/or Abdomen and/or Pelvis

Surveillance

Any aortic dissection, regardless of treatment modality (medical or surgical), imaging of the chest, abdomen and pelvis (according to the Imaging for Aortic Conditions table above) is considered medically necessary at the following intervals:

- 1 month after initial diagnosis
- 6 months after initial diagnosis
- 12 months after initial diagnosis
- If stable, annually

In individuals with Marfan syndrome/Loeys-Dietz/Ehlers-Danlos and an aortic dissection, post-dissection imaging of the chest, abdomen and pelvis (according to the Imaging for Aortic Conditions table above) is considered medically necessary as follows:

- 1 month post-dissection
- 3 months post-dissection
- 6 months post-dissection
- 12 months post-dissection
- yearly thereafter

If the dissection extends into the head or neck, any of the following imaging is also considered medically necessary at the same intervals:

- MRA Head and/or MRA Neck or
- Carotid duplex CPT or
- CTA Neck or
- CTA Head or
- CTA Head and Neck

Imaging of asymptomatic and/or incidentally found arterial dissections that do not affect the aorta (such as, iliac arteries, visceral arteries, extracranial arteries) is considered medically necessary according to the general schedule as follows:

- Within one month of diagnosis
- Six months after diagnosis
- 12 months after diagnosis
- No further imaging after 12 months if noted to be stable

Imaging of asymptomatic penetrating aortic ulcers treated medically is medically necessary according to the following time intervals as follows:

- One month after diagnosis
- If stable, every 6 months for 2 years

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- Then at appropriate intervals thereafter (depending on patient age and PAU characteristics) as determined by the provider managing the condition

Evidence Discussion

Aortic and arterial dissection is usually a result of vessel wall damage due to uncontrolled hypertension or physical trauma. Some connective tissue and genetic disorders also carry a higher risk for vessel dissection. Emergent cases usually present with symptoms of impending vessel rupture, organ malperfusion or hemodynamic instability. For these cases, advanced imaging is required for surgical planning. Additional imaging of anatomic regions with suspected involvement are considered necessary in these cases. Acute dissection cases without these features may be observed with medical management until stable.

A chronic arterial dissection will often degenerate into an aneurysm over time. The risk is related to the dissected area of aorta, as well as non-dissected native aortic segments because of underlying medial degeneration. Multiple major studies have been conducted to recommend criteria for intervention based on size and anatomic considerations. Individuals with certain genetic syndromes including Marfan, Loeys-Dietz and Ehlers-Danlos Type IV may be at risk for accelerated vessel degeneration and should undergo more frequent surveillance.

Due to the complex anatomy associated with arterial dissection, CT/MR imaging is recommended over duplex imaging for thoracic, abdominal and visceral artery dissections. Duplex imaging may still be useful for carotid monitoring depending on the extent of vessel involvement.

Asymptomatic arterial dissections not associated with the aorta should undergo regular surveillance for the first year after detection. No further imaging has found to be of benefit if findings remain stable.

Penetrating aortic ulcers are frequently found in the setting of severe aortic atherosclerosis and may carry a significant rupture risk. Frequent surveillance for the first year after detection is medically necessary to determine if intervention is necessary. If the penetrating aortic ulcer remains stable after twelve months, the frequency of imaging may be reduced to annually until intervention is indicated.

Classic symptoms of sharp, severe acute onset of retrosternal or interscapular chest pain is seen in 96% and is best adapted to the emergent setting. Chest x-ray is imprecise; any suspicion should be considered since up to 10% of individuals with aortic dissection present without classic symptoms.

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Post-operative Imaging

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Post Aortic Endovascular/Open Surgery Surveillance Studies (PVD-6.8)

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Open Procedures

Criteria

- Aortic root/ascending aortic procedures for aneurysm (e.g., aortic root repair, arch/ hemi-arch repair, Elephant trunk repair). One of the following post-operative studies [Echocardiography or CT Chest with contrast (CPT® 71260) or CT Chest without contrast (CPT® 71250) or CTA Chest (CPT® 71275)], is considered medically necessary as follows:
  - Within 1 year post-operative
  - Then every 5 years
- For aortic root/ascending aortic procedures for dissection see **Aortic and Arterial Dissection and Other Aortic Conditions (PVD-6.7)**
- Open descending thoracic aortic aneurysm repair- **One** of the following post-operative studies [CT Chest with contrast (CPT® 71260) **or** CT Chest without contrast (CPT® 71250) **or** CTA Chest (CPT® 71275)], is considered medically necessary as follows:
  - Within 1 year post-operative
  - Then every 5 years
- Open Aortic Abdominal Aneurysm Repair - contrast and non-contrast enhanced CT of the entire aorta (CPT® 74176, CPT® 74177, CPT® 74174) is considered medically necessary as follows:
  - Within 1 year post-operative
  - Then every 5-years
  - As requested to assess for suspected infection of the graft (see **Vascular Graft Infection (PVD-21)** for additional imaging in vascular graft infection)

Endovascular Procedures

Criteria

Post-operative surveillance after TEVAR for any indication (PVD-6.8.1)

Imaging for post-operative TEVAR	CPT®
CT Chest, and/or Abdomen, and/or Pelvis	71260 74177 74160 72193
CTA Chest, and/or Abdomen, and/or Pelvis	71275 74175 72191 74174
MRA Chest, and/or Abdomen, and/or Pelvis	71555 74185 72198

Note:

Abdomen and Pelvis imaging is considered medically necessary only if TEVAR performed for a dissection that extends into the abdomen or pelvis

- **Any** of the studies listed in the table above are considered medically necessary for post-operative surveillance imaging after TEVAR as follows:
  - One month
  - Twelve months
  - Then annually for life
- If an endoleak is identified at the 1-month study, more frequent imaging is considered medically necessary as requested.

Post-operative Surveillance After Abdominal EVAR (Endovascular Aneurysm Repair) (PVD-6.8.2)

Criteria

Imaging for post-operative abdominal EVAR	CPT®
CT Abdomen and/or Pelvis with contrast	74160 72193 74177
CT Abdomen and/or Pelvis without and with contrast	74170 72194 74178
CTA Abdomen and/or Pelvis	74175 72191 74174
MRA Abdomen and/or Pelvis	74185 72198

Post-operative surveillance after abdominal EVAR is considered medically necessary as follows:

- CT (any contrast level) or CTA of the entire aorta at 5-year intervals (CPT® 74176)
- CT as per above coding as requested and color duplex ultrasound (CPT® 93975, CPT® 93976, CPT® 93978, or CPT® 93979) one month after EVAR
- If no endoleak, or sac enlargement, repeat either preferred CT or duplex ultrasound (but not both) at 12 months.
- If a type II endoleak is observed 1 month after EVAR, may approve **both** at 6 months:
  - Any of the above CT with contrast
  - Color duplex US
- If no endoleak or AAA sac enlargement is detected at 1 year after EVAR annual surveillance with:
  - Color duplex US
  - If DGUS is not available, any of the above CT can be performed.
- If a type II endoleak is associated with an aneurysm sac that is shrinking or stable in size:
  - Continue surveillance with color duplex US every 6 months for 2 years
  - Annually thereafter
- If US detects a new endoleak, graft migration, or aneurysm sac growth > 5mm:

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- Any of the above CT scan as requested

Post-endoleak intervention surveillance imaging

Surveillance imaging after EVAR, or any subsequent endoleak intervention, is based on the most recent intervention.

For any subsequent interventions for endoleak repair, imaging is considered medically necessary at 1 month with CT and then follow protocol as above.

Surveillance following Complex EVAR (i.e., a branched/fenestrated graft)

CT as per above coding as requested and/or color duplex ultrasound (CPT® 93975, CPT® 93976, CPT® 93978, or CPT® 93979) is considered medically necessary at 1-month post-operative, 6 months post-operative, 12 months post-operative, and annually thereafter.

A 3 month follow-up study is considered medically necessary if endoleak of aneurysm enlargement is identified at 1-month post-operative.

Endovascular (Stent) Iliac Repair (PVD-6.8.3)

Criteria

Imaging for endovascular iliac repair (stent)	CPT®
CT Pelvis	72193 72194
CTA Pelvis	72191
MRA Pelvis	72198

- One of the above studies is considered medically necessary for endovascular iliac repair (stent).
- If performed in conjunction with EVAR, surveillance will follow the same schedule as EVAR.
- For isolated iliac artery aneurysm repair, surveillance is considered medically necessary with an arterial duplex (CPT® 93975, CPT® 93976, CPT® 93978, or CPT® 93979) or CT or MR as above if duplex unavailable:
  - Post-operatively within the first month
  - 6 months after endovascular treatment

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- Annually

Evidence Discussion

Post Aortic Endovascular/Open Surgery Surveillance Studies

Surgical management of aortic pathology has evolved substantially over the past several decades. Open surgical repair (OSR) remains an important treatment modality, particularly for pathology involving the ascending aorta and for thoracic or abdominal aneurysms with complex anatomy not amenable to endovascular techniques. However, advances in endovascular aortic repair (EVAR) have shifted contemporary practice patterns, with EVAR now frequently preferred for descending thoracic, abdominal, and iliac artery disease when anatomy is suitable. Compared with OSR, EVAR offers a less invasive approach with lower perioperative morbidity and mortality, although long term durability differs between the two strategies (Karanikola et al., 2014).

Postoperative surveillance strategies vary based on both anatomic location and type of repair. Open repair is generally associated with greater long term durability and lower rates of device-related complications, allowing for longer intervals between follow up imaging. In contrast, EVAR requires more intensive and lifelong surveillance due to a higher incidence of late device-related complications and reintervention. This difference reflects the inherent trade-off between the invasiveness of open surgery and the potential for endograft-related failure over time (Expert Panel on Vascular Imaging et al., 2026).

One of the most common complications following EVAR is the development of an endoleak, which occurs when there is persistent blood flow outside the graft but within the aneurysm sac due to incomplete seal or graft failure. Endoleaks are relatively common, occurring in up to approximately 30% of EVAR patients, and can lead to continued pressurization of the aneurysm sac with a subsequent risk of enlargement and rupture. Management depends on endoleak type and sac behavior. Types I and III endoleaks are considered high risk and generally require prompt intervention due to their association with increased rupture risk, whereas many type II endoleaks may be managed conservatively if the aneurysm sac remains stable. However, sac enlargement—typically defined as an increase of more than 5 mm—warrants further evaluation and often reintervention. Patients undergoing secondary repair for endoleaks require continued surveillance, as recurrent complications and late failures may occur (Cifuentes et al., 2023).

Imaging plays a central role in both initial evaluation and long term follow up of aortic disease. For thoracic aortic pathology, cross sectional imaging with computed tomography angiography (CTA) or magnetic resonance imaging (MRI) is typically required due to the limited acoustic windows and anatomic constraints of ultrasound in

this region. In contrast, surveillance following abdominal EVAR often begins with CTA or MRA in the early postoperative period to confirm appropriate graft positioning, absence of endoleak, and aneurysm sac status. After this baseline evaluation, many patients can transition to duplex ultrasound (DUS)–based surveillance, particularly when the aneurysm sac is stable and no endoleak is present. Ultrasound-based strategies may reduce radiation exposure and contrast use while maintaining acceptable diagnostic performance in selected patients (Karanikola et al., 2014).

Cross sectional imaging with CTA or MRI remains essential when complications are suspected, including endoleak, graft infection, structural graft failure, or aneurysm sac enlargement. These modalities provide superior anatomic detail and are required for preoperative planning if reintervention is being considered (Expert Panel on Vascular Imaging et al., 2026).

Complex endovascular aneurysm repair techniques, including fenestrated and branched EVAR, have further expanded the applicability of minimally invasive approaches to patients with challenging anatomy involving visceral branch vessels. While these approaches offer significant advantages in high risk patients, they are associated with higher rates of secondary intervention and require careful long term surveillance. Although duplex ultrasound may have a role in selected cases, CT based imaging is often necessary to adequately evaluate complex graft configurations and branch vessel patency (Expert Panel on Vascular Imaging et al., 2026).

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Post-procedure Surveillance Studies (PVD-7.3)

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Criteria

- Scheduled Interval
  - ABI (CPT® 93922) following any revascularization procedure
    - ABI (CPT® 93922) or Duplex ultrasound (CPT® 93926 unilateral study) at each routine follow-up is considered medically necessary generally after a history/ physical has been performed.
    - Further imaging studies such as CTA or MRA are considered medically necessary for worsening symptoms, an abnormal duplex or a significant reduction (>0.15) in the ABI.

Indication	Imaging
Suprainguinal Revascularization, both open and endovascular therapy, including Aortobifem/iliofem/fem-fem bypass/iliac angioplasty/stent	• Clinical examination and ABI (CPT® 93922) with arterial duplex (CPT® 93925 or CPT® 93926) is considered medically necessary at: ◦ Within 1 month ◦ 6 months ◦ 12 months ◦ Then annually
Infrainguinal Open Revascularization (Femoral-popliteal, femoral-tibial, femoral-distal bypass)	

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Indication	Imaging
• With vein or autologous conduit	• Clinical exam and ABI (CPT® 93922) with arterial duplex (CPT® 93925 or CPT® 93926) is considered medically necessary at: ◦ Post-operatively ◦ 3 months ◦ 6 months ◦ 12 months ◦ Then annually
• With Prosthetic conduit (PTFE/Dacron)	• Clinical exam and ABI (CPT® 93922) with arterial duplex (CPT® 93925 or CPT® 93926) is considered medically necessary at: ◦ Post-operatively ◦ 6 months ◦ 12 months ◦ Then annually
Infrainguinal Endovascular Revascularization Femoropopliteal angioplasty/stent	• Clinical exam and ABI (CPT® 93922) with arterial duplex (CPT® 93925 or CPT® 93926) is considered medically necessary at: ◦ Within 1 month ◦ 3 month ◦ Every 6 months for two years ◦ Then annually

After Suprainguinal Intervention (PVD-7.3.1)

Criteria

- One of the following studies: Arterial duplex, CTA Abdomen and Pelvis, CT Abdomen and Pelvis with contrast, CTA Aorta with lower extremity runoff, MRI Abdomen and Pelvis, MRA Abdomen and Pelvis, or MRA Aorta with lower extremity runoff is considered medically necessary for any **one** of the following:
  - Worsening signs or symptoms
  - Reduction of ABI >0.15
  - Findings suggestive of high grade stenosis or in-stent re-stenosis

- Duplex ultrasound finding of peak systolic velocity (PSV) ≥190 cm/s
- Velocity ratio ≥1.5

After Infrainguinal Intervention (PVD-7.3.2)

Criteria

- CTA Lower Extremity (CPT® 73706) or MRA Lower Extremity (CPT® 73725) or CTA Aorta with lower extremity runoff CPT® 75635) is considered medically necessary for any **one** of the following:
  - Worsening signs or symptoms
  - Reduction of ABI >0.15
  - Findings suggestive of high grade stenosis or in-stent re-stenosis
    - Duplex ultrasound finding of peak systolic velocity (PSV) ≥190 cm/s
    - Velocity ratio ≥1.5
  - Findings suggestive of threatened graft (Low graft velocity <45 cm/s)
- If intervention was performed for a non-healing wound and wound has gone on to heal, additional imaging is considered **not** medically necessary for surveillance.
- Repeat arterial duplex imaging can be obtained for worsening clinical signs and symptoms such as the presence of a new wound or rest pain.

Evidence Discussion

Following either open surgical or endovascular revascularization for peripheral arterial disease, structured surveillance is recommended. The primary objective of post-intervention follow-up is to maintain vessel or graft patency, thereby preventing recurrent ischemic symptoms and reducing the risk of limb loss or amputation. Surveillance strategies typically incorporate serial clinical assessment in combination with noninvasive hemodynamic and imaging modalities, most commonly ankle–brachial index (ABI) measurements and duplex ultrasound (DUS) (Zierler et al., 2018).

Duplex ultrasound and ABI surveillance allow for early detection of restenosis, graft stenosis, or progression of disease before clinical deterioration occurs, enabling timely reintervention and improved limb salvage outcomes. Evidence suggests that DUS surveillance is associated with improved primary assisted patency and may reduce major amputation rates following both surgical bypass and endovascular intervention (McKenna et al., 2025; Tsitsou et al., 2026).

The frequency and modality of surveillance vary depending on procedural factors, including whether the intervention was endovascular (e.g., angioplasty or stenting) or open (e.g., bypass grafting), as well as the conduit type in surgical bypass (autogenous

vein versus prosthetic graft). In general, more intensive surveillance protocols are often applied after bypass grafting—particularly vein grafts—given the risk of stenotic lesion development, whereas endovascular interventions also require routine follow-up to monitor for restenosis or loss of patency. Surveillance intervals are typically individualized, but commonly include early postoperative imaging followed by periodic assessments (e.g., at 1, 3, 6, and 12 months and annually thereafter) to ensure ongoing durability of the intervention (Shih et al.,2024; Abu Dabrh et al., 2017).

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Vasculitis

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Large Vessel Vasculitis (PVD-6.9)

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Inflammatory Aortitis (PVD-6.9.1)

Imaging for Inflammatory Aortitis	CPT®
CTA Chest	71275
MRA Chest	71555
CTA Pelvis	72191
MRA Pelvis	72198
CTA Abdomen and Pelvis	74174
CTA Abdomen	74175
MRA Abdomen	74185

Criteria

Initial imaging

- Initial imaging with CTA or MRA of the affected body region is considered medically necessary when clinical evaluation leads to the suspicion of inflammatory aortitis.

Repeat imaging

- Follow-up imaging with CTA or MRA of the affected body region is considered medically necessary for:
  - Change in signs/symptoms
  - Known aneurysm monitoring
    - See **Cerebral Aneurysm and AVM (HD-12)** in the Head Imaging Guidelines
    - See **TAA Imaging Indications**
    - See **Abdominal Aortic Aneurysm (AAA) (PVD-6.3)**

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Giant Cell Arteritis (GCA) (PVD-6.9.2)

CPT®	Imaging for Giant Cell Arteritis
70544	Magnetic resonance angiography, head; without contrast material(s)
70545	Magnetic resonance angiography, head; with contrast material(s)
70546	Magnetic resonance angiography, head; without contrast material(s), followed by contrast material(s) and further sequences
70547	Magnetic resonance angiography, neck; without contrast material(s)
70548	Magnetic resonance angiography, neck; with contrast material(s)
70549	Magnetic resonance angiography, neck; without contrast material(s), followed by contrast material(s) and further sequences
71275	Computed tomographic angiography, chest (noncoronary), with contrast material(s), including noncontrast images, if performed, and image postprocessing
71555	Magnetic resonance angiography, chest (excluding myocardium), with or without contrast material(s)
74174	Computed tomographic angiography, abdomen and pelvis, with contrast material(s), including noncontrast images, if performed, and image postprocessing
74175	Computed tomographic angiography, abdomen, with contrast material(s), including noncontrast images, if performed, and image postprocessing
72191	Computed tomographic angiography, pelvis, with contrast material(s), including noncontrast images, if performed, and image postprocessing
74185	Magnetic resonance angiography, abdomen, with or without contrast material(s)
72198	Magnetic resonance angiography, pelvis, with or without contrast material(s)
73725	Magnetic resonance angiography, lower extremity, with or without contrast material(s)
78815	Positron emission tomography (PET) with concurrently acquired computed tomography (CT) for attenuation correction and anatomical localization imaging; skull base to mid-thigh

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CPT®	Imaging for Giant Cell Arteritis
78816	Positron emission tomography (PET) with concurrently acquired computed tomography (CT) for attenuation correction and anatomical localization imaging; whole body

Criteria

Initial imaging

Cranial GCA is the more common type with temporal artery involvement. For predominantly Cranial GCA, the following studies are considered medically necessary for initial imaging:

- US (CPT® 93880 or CPT® 93882) of the temporal (and or axillary) arteries is the preferred modality where available.
- MRA Head and/or MRA Neck when **either** of the following apply:
  - Vascular trained ultrasonography is not available.
  - US is negative or equivocal with a clinical suspicion of GCA.
- MRA of the Abdomen and/or Lower extremities when involvement suspected clinically
- PET/CT Whole Body is considered medically necessary when MRA or US are equivocal and one of the following conditions exists:
  - Temporal artery biopsy is negative and GCA is still suspected.
  - where the result would change clinical management
- US of the neck vessels (CPT® 93880 or CPT® 93882) and MRA Chest

Note:

For suspected cerebral vasculitis in individuals with neurological symptoms, see **Cerebral Vasculitis (HD-22)** in the Head Imaging Guidelines

Extra-cranial GCA: less commonly encountered. None of the “classic” clinical signs or symptoms of cranial GCA are present initially but may develop later.

- Extra-cranial GCA is characterized by at least two or more of the following:
  - Jaw and/or upper extremity claudication
  - Fever/weight loss or fever of unknown origin (FUO) symptoms
  - New murmurs
  - Pulse asymmetry
  - Abdominal pain
  - Pulsatile mass
  - High inflammatory markers such as CRP or ESR > 50 mm/h
- Medically necessary imaging for aortic root, arch or abdomen involvement:

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- MRA Chest, MRA Neck , MRA Abdomen , CTA Chest , CTA Neck or CTA Abdomen
- PET/CT Skull base to mid thigh if MRA or CTA are non-diagnostic and there is still suspicion for aortic root, arch or abdomen involvement

Repeat imaging

- Follow-up imaging is considered medically necessary for **any** of the following:
  - One-time documentation of remission or disease control
  - Change in signs/symptoms suggesting progression of disease
  - Although individuals with GCA can develop aortic aneurysms over time, screening in the absence of signs or symptoms is considered not medically necessary.
  - In individuals with known thoracic or abdominal aortic aneurysm:
    - See **TAA Imaging Indications** for thoracic aneurysm surveillance
    - See **Abdominal Aortic Aneurysm (AAA) (PVD-6.3)** for abdominal aneurysm surveillance.
- Follow-up imaging is not considered medically necessary for individuals in clinical and biochemical remission or without aneurysm/complication.

Takayasu's Arteritis (PVD-6.9.3)

CPT®	Imaging for Takayasu's Arteritis
71275	Computed tomographic angiography, chest (noncoronary), with contrast material(s), including noncontrast images, if performed, and image postprocessing
72191	Computed tomographic angiography, pelvis, with contrast material(s), including noncontrast images, if performed, and image postprocessing
74174	Computed tomographic angiography, abdomen and pelvis, with contrast material(s), including noncontrast images, if performed, and image postprocessing
74175	Computed tomographic angiography, abdomen, with contrast material(s), including noncontrast images, if performed, and image postprocessing
71555	Magnetic resonance angiography, chest (excluding myocardium), with or without contrast material(s)
72198	Magnetic resonance angiography, pelvis, with or without contrast material(s)
74185	Magnetic resonance angiography, abdomen, with or without contrast material(s)

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CPT®	Imaging for Takayasu's Arteritis
78815	Positron emission tomography (PET) with concurrently acquired computed tomography (CT) for attenuation correction and anatomical localization imaging; skull base to mid-thigh

Criteria

Initial imaging

- Initial imaging is considered medically necessary for signs and symptoms suggestive of disease such as absent radial pulse, difficulty obtaining BP in one arm, or unexplained hypertension.
- Initial staging PET-CT is considered medically necessary in place of MRA or CTA of multiple areas when diffuse large vessel involvement, or occult vessel involvement, is suspected.
- Any of the following modalities are medically necessary for evaluation of Takayasu's arteritis:
  - MRA of the affected body area(s) (contrast as requested)
  - CTA of the affected body area(s) (contrast as requested)
  - Ultrasound with Doppler of the affected body area(s)

Repeat imaging

Repeat imaging with any CTA or MRA in the above table is considered medically necessary at the following intervals:

- Every 3 months to monitor treatment response during active treatment with systemic therapy
- Annually for surveillance of known involved body areas to detect progressive vascular damage that may require intervention

Evidence Discussion

Large Vessel Vasculitis

Large vessel vasculitis is generally sub-grouped into three areas:

- Aortitis (Inflammatory Aortitis)
- Giant Cell Vasculitis
- Takayasu's Arteritis

Initial diagnosis of large vessel vasculitis (Inflammatory aortitis, Giant cell, and Takayasu's arteritis) should be made through history, physical exam and laboratory values including inflammatory markers. In cases of suspected large vessel disease,

ultrasound, CT/ and MR imaging of the neck/chest/abdomen/pelvis are considered medically necessary. PET imaging should be reserved for cases where CT/MR are non-diagnostic and the likelihood of disease based on other factors is high.

PET imaging has recently been incorporated into the American College of Rheumatology GL for the Diagnosis of GCA, for research purposes and to exclude alternate diagnosis(Ponte et al.,2022). PET can be utilized in the rare instances MRA or US are equivocal, temporal artery biopsy is negative and GCA is still suspected, or where the result would change clinical management(Expert Panel on Vascular Imaging et al., 2021; Dejaco et al.,2024)

Aortic arch involvement is common (see below); US of the neck vessels and MRA of the chest may also be considered in initial screening. Abdominal involvement is less common in GCA, but common in Takayasu's arteritis (see below). MRA of the abdomen and/or LE's, may also be considered in initial screening when involvement suspected clinically (Ponte et al., 2022, Dejaco et al. 2024).

Aortitis

Aortitis may be congenital (Marfan, Hypermobility Syndromes, others) or acquired, including traumatic, atherosclerotic (dissecting aneurysm, other), infectious (syphilis, tuberculosis, other), neoplastic or inflammatory (Ankylosing Spondylitis, Giant Cell Arteritis, Cogan's, Relapsing Polychondritis, Behcet's Syndrome, Polyarteritis Nodosa, Granulomatous Polyangiitis, Lupoid, idiopathic, other).

Giant Cell Arteritis

Historically, GCA had been be subdivided into two basic types: cranial predominant and extra-cranial. Currently, both GCA type vasculitis and Takayasu's arteritis have similar management requirements as variants of large vessel vasculitis (LVV).

Initial diagnosis of large vessel vasculitis (Inflammatory aortitis, Giant cell, and Takayasu's arteritis) should be made through history, physical exam and laboratory values including inflammatory markers. In cases of suspected large vessel disease, ultrasound, CT/ and MR imaging of the neck/chest/abdomen/pelvis are considered medically necessary. PET imaging should be reserved for cases where CT/MR are non-diagnostic and the likelihood of disease based on other factors is high. Follow-up imaging is considered medically necessary for individuals with known aneurysmal disease or who remain symptomatic on active therapy. PET imaging has recently been incorporated into the American College of Rheumatology GL for the Diagnosis of GCA, for research purposes and to exclude alternate diagnosis (Ponte et al., 2022).

Takayasu's Arteritis

Instead of multiple MRA's, an initial staging PET-CT can be approved where diffuse large vessel involvement, or occult vessel involvement, is suspected in an LVV.

Ordering both studies initially is discouraged. Follow-up MRA is preferred as PET-CT in some patients may never normalize. For Takayasu's arteritis, annual surveillance in the absence of symptoms is recommended due to the high risk of progressive vascular damage.

PVD Imaging Guidelines

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Small Vessel Vasculitis (PVD-6.11)

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Criteria

- Advanced imaging is not sensitive enough to detect changes in small vessels and is considered not medically necessary for primary assessment of any small vessel vasculitis.
- End-organ damage can occur with several of the small vessel vasculitides and are addressed in this guideline:
  - Henoch-Schönlein Purpura (HSP)
  - Granulomatosis with polyangiitis (GPA, formerly known as Wegener's granulomatosis)
  - Eosinophilic granulomatosis with polyangiitis (EGPA, formerly known as ChurgStrauss Syndrome)
  - Immune complex associated small-vessel vasculitis [immunoglobulin A–associated vasculitis (IgAV)]

IgA Vasculitis Henoch-Schönlein Purpura (HSP)

Criteria

Initial imaging

Ultrasound (US) Abdomen (CPT® 76700) is considered medically necessary to evaluate possible gastrointestinal complications of known or suspected HSP including **any** of the following:

- Bowel wall edema and hemorrhage
- Intussusception

CT Abdomen with contrast (CPT® 74160) is considered medically necessary if additional information is needed after ultrasound for management.

Repeat imaging

US Abdomen (CPT® 76700) is considered medically necessary for known HSP to evaluate new or worsening gastrointestinal symptoms.

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Background and Supporting Information

Henoch-Schönlein Purpura (HSP) is the most common vasculitis of childhood, mainly involving small blood vessels.

Granulomatosis with Polyangiitis (GPA) Formerly Wegener's Granulomatosis

Criteria

Initial Imaging

Initial imaging as a baseline prior to starting immunosuppressive therapy is considered medically necessary in all individuals who are newly diagnosed or suspected of having antineutrophil cytoplasmic autoantibody (ANCA)-associated vasculitides (AAV) with either or both of the following to evaluate the extent of the disease:

- CT Sinuses (CPT® 70486) and/or
- CT Chest without contrast (CPT® 71250) or with contrast (CPT® 71260)

Note:

Preferred CT imaging in individuals with AAV should be performed without an iodinated contrast agent administered.

Repeat Imaging

CT Sinuses (CPT® 70486) and/or CT Chest without contrast (CPT® 71250) or CT Chest with contrast (CPT® 71260) are considered medically necessary for **any** of the following:

- New or worsening clinical symptoms affecting the body area requested
- Assess response to medical therapy when a change in treatment regimen is being considered
- Annually-to evaluate the extent of disease

Eosinophilic Granulomatosis with Polyangiitis (EGPA) Formerly Churg-Strauss Syndrome

Criteria

Initial Imaging

- CT Chest without contrast (CPT® 71250) or CT Chest with contrast (CPT® 71260) is considered medically necessary in the initial evaluation of Eosinophilic granulomatosis with polyangiitis (EGPA) formerly known as Churg-Strauss Syndrome.

Repeat Imaging

- CT Chest without contrast (CPT® 71250) or CT Chest with contrast (CPT® 71260) is considered medically necessary for any of the following:
  - New or worsening clinical symptoms affecting the body area requested
  - Assess response to medical therapy when a change in treatment regimen is being considered
  - Annually-to evaluate the extent of disease

Immune Complex Associated Small-vessel Vasculitis

Criteria

Initial Imaging

- Doppler ultrasound (US) of the affected body part (most commonly abdomen) is considered medically necessary in the initial evaluation of immune complex associated small-vessel vasculitis.

Repeat Imaging

- Doppler ultrasound (US) of the affected body part (most commonly abdomen) is considered medically necessary in the following circumstances:
  - New or worsening clinical symptoms affecting the body area requested
  - To assess response to medical therapy when a change in treatment is being considered
  - Annually-to evaluate the extent of disease

Evidence Discussion

Small Vessel Vasculitis

Advanced imaging is not routinely needed with diagnosis of small vessel vasculitis. In suspected cases, clinical assessment of end-organ damage is usually indicated in both the adult and pediatric population

Initial diagnostic workup should include history, physical exam, and laboratory data including inflammatory markers. End-organ damage may involve multiple organ systems based on the type of vasculitis. For individuals with suspected disease, ultrasound, CT and MR imaging of the affected anatomic regions may be indicated.

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Annual surveillance in the absence of symptoms is still recommended due to the high risk of progressive vascular damage.

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Peripheral Artery Aneurysms

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Visceral Artery Aneurysm (PVD-6.5)

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Criteria

Treatment is generally considered medically necessaryfor visceral aneurysms ≥2cm. Imaging of visceral artery aneurysms for initial evaluation or for treatment planning is considered medically necessary as follows:

- Initial imaging of calcifications seen on plain film imaging suspicious for visceral artery aneurysms (spleen, kidney, liver or intestines) with ultrasound (CPT® 76700, 76705, 93975, 93976, 93978, or 93979), **or** CTA Abdomen (CPT® 74175), **or** CT Abdomen with contrast (CPT® 74160)
- MRA Abdomen (CPT® 74185) without contrast in place of CTA or CT Abdomen in pediatric individuals or when there is a contraindication to contrast materials (i.e., renal insufficiency, contrast allergy, pregnancy)
- Ultrasound (CPT® 76700,76705, 93975, 93976, 93978, or 93979) **or** CTA Abdomen (CPT® 74175) **or** CT Abdomen with contrast (CPT® 74160) is considered medically necessary for further monitoring based on the intervals below or **as determined by a vascular specialist or any provider in consultation with a vascular specialist**:
  - Splenic artery aneurysms:
    - <20mm can be imaged every three years
    - 20mm to 29mm can be imaged annually
    - If ≥30mm, they should be referred for treatment, either stent, excision or splenectomy
  - For all other visceral artery aneurysms:
    - Initial evaluation with six-month follow-up for one year
    - Further follow-up annually if no significant enlargement is seen
- CTA Abdomen (CPT® 74175), MRA Abdomen (CPT® 74185), or CT Abdomen with contrast (CPT® 74160) is considered medically necessary following stent placement at:
  - 1 month
  - 6 months
  - 12 months
  - Then every year

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Evidence Discussion

Aneurysmal disease, besides primarily involving the large vessels, can also affect medium and smaller sized vessels. Visceral cases are uncommon and occasionally are associated with certain connective tissue and genetic disorders. They are often found incidentally on imaging. Ultrasound, CT, or CTA imaging may be indicated for surveillance in these cases. Due to the anatomic location of the visceral vessels, duplex ultrasound may have technical limitations. Consideration of best surveillance study should be decided on initial imaging and whether a certain modality is felt to provide diagnostic information. Example; some splenic arterial aneurysms may be diagnostic with US but others may be obscured by bowel gas requiring CT/CTA. Splenic artery aneurysms, the most common (60%), tend to exhibit very slow rates of growth, while the other visceral artery aneurysms are more unpredictable in their rate of growth with a greater tendency to rupture. Visceral Artery Aneurysms are defined by an increase of more than 50% of the original arterial diameter and include hepatic, renal and intestinal artery aneurysms.

PVD Imaging Guidelines

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Iliac Artery Aneurysm (IAA) (PVD-6.4)

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Criteria

- Ultrasound (CPT® 76882 or CPT® 93925) is considered medically necessary for evaluation of a suspected IAA.
  - CT Pelvis with contrast (CPT® 72193) if ultrasound is equivocal
  - Ultrasound for follow-up imaging annually if an aneurysm is ≥2cm
- Additional Imaging
  - CT Abdomen and Pelvis with contrast (CPT® 74177), CT Abdomen and Pelvis without and with contrast (CPT® 74178), or CTA Abdomen and Pelvis (CPT® 74174) is considered medically necessary for preoperative imaging if endovascular or open repair is being considered.

Background and Supporting Information

- Isolated IAAs are rare and are typically associated with AAA.
- Approximately one third to one half of isolated IAAs are bilateral at time of presentation.
- Abdominal Aortic aneurysm rupture usually occurs at a diameter of 5 cm or larger, whereas common iliac aneurysms that are less than 3 cm in diameter almost never rupture.

Evidence Discussion

Annual surveillance of iliac artery aneurysms is medically necessary to determine when intervention is necessary if an iliac aneurysm exceeds 2cm in diameter. Duplex ultrasound is the primary imaging modality for individuals without technical limitations related to body habitus. It has been demonstrated to be accurate, cost-effective, and does not use ionizing radiation or contrast. CT imaging may be indicated for cases where ultrasound is equivocal or for surgical planning.

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Lower Extremity Artery Aneurysms (PVD-7.4)

PVD.AI.0007.4.A
v1.0.2027

Imaging Indications

Criteria

Iliac Artery Aneurysm

See **Iliac Artery Aneurysm (IAA) (PVD-6.4)**

Femoral Artery Aneurysm

- Initial imaging is considered medically necessary as follows:
  - Ultrasound (CPT® 93925 bilateral study or CPT® 93926 unilateral study).
- Surveillance imaging is considered medically necessary as follows:
  - Asymptomatic true femoral aneurysms smaller than 2.5 cm in diameter
    - Ultrasound (CPT® 93926 unilateral study) annually
  - Asymptomatic true femoral aneurysms larger than 2.5 cm
    - Ultrasound (CPT® 93926 unilateral study) every 6 months
- Other imaging is considered medically necessary as follows:
  - CTA or MRA Lower extremity (CPT® 73706 or 73725 or 74198 or 75635):
    - Pre-operative study for individuals with no plans for invasive angiography
    - Technically limited or abnormal ultrasound results

Popliteal Artery Aneurysm

- Initial imaging is considered medically necessary as follows:
  - Ultrasound (CPT® 93925 bilateral study or CPT® 93926 unilateral study) and Ultrasound to assess for a contralateral popliteal aneurysm and abdominal aortic aneurysm (CPT® 76770 or CPT® 76775)
- Surveillance imaging is considered medically necessary as follows:
  - If no intervention: Ultrasound (CPT® 93926 unilateral study) annually
  - Post-intervention: (ABI (CPT® 93922) and Duplex ultrasound are considered medically necessaryas follows:
    - 3 months post-operative
    - 6 months post-operative

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        - 12 months post-operative
        - Then annually
- Other imaging is considered medically necessary as follows:
    - CTA or MRA (CPT® 73706 or 73725 or 74185 or 75635) for:
        - Pre-operative study
        - Technically limited or abnormal ultrasound results

Evidence Discussion

Duplex ultrasound is the preferred modality for surveillance of lower extremity arterial aneurysms. This modality uses no ionizing radiation or contrast, has a reasonable level of accuracy, and is cost-effective. CT/MR imaging may be indicated for preoperative planning or in cases where ultrasound is technically limited.

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Peripheral Arterial Imaging

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Upper Extremity PVD – Imaging (PVD-4.1)

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Criteria

Initial Imaging

For arterial insufficiency, arterial ultrasound upper extremities (CPT® 93930 or CPT® 93931) is considered medically necessary for signs and symptoms of arterial insufficiency including:

- Arm or hand claudication
- Bluish discoloration of the hand or fingers
- Unilateral cold, painful, pulseless hand
- Non-healing wound (>2 weeks with no healing or evidence of healing) or frank gangrene
- CTA Upper extremity (CPT® 73206) or MRA of Upper extremity (CPT® 73225), **and/or** CTA Chest (CPT® 71275) or MRA Chest (CPT® 71555) is considered medically necessary for:
  - Abnormal arterial ultrasound results
  - Equivocal arterial ultrasound results
  - Pre-operative planning

For Subclavian Steal Syndrome, the following studies are considered medically necessary:

- Carotid duplex (CPT® 93882) is the initial and definitive imaging study.
- CTA Chest (CPT® 71275) or MRA Chest (CPT® 71555) for carotid duplex showing reversal of flow in one of the vertebral arteries
- Surveillance of subclavian arterial disease is considered **not** medically necessary if there has not been any intervention such as a carotid-subclavian bypass or subclavian stent.

Note:

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If the carotid duplex is not diagnostic for reversal of flow in the ipsilateral vertebral artery, then neurological symptoms should be evaluated according to the Head Imaging guideline.

For suspected Fibromuscular Dysplasia of the brachial artery, medically necessary studies include:

- MRA Upper extremity (CPT® 73225)
- CTA Upper extremity (CPT® 73206)
- Arterial Ultrasound (CPT® 93930 bilateral study or CPT® 93931 unilateral study)

For arterial thoracic outlet syndrome, medically necessary studies include:

- CTA Chest (CPT® 71275) (preferred study) or MRA Chest (CPT® 71555) (preferred study) or CT Chest either without or with contrast (CPT® 71250 or CPT® 71260) or MRI Chest with contrast (CPT® 71551)
- For venous thoracic outlet syndrome see **Upper Extremity Venous – Imaging (PVD-4.2)**
- For neurogenic thoracic outlet syndrome see **Brachial Plexus (PN-4.1)**

Post-revascularization

- Arterial Duplex (CPT® 93931) is considered medically necessary following upper extremity arterial revascularization at:
  - Baseline (within one month)
  - 6 months
  - Then annually if stable
  - Any time for new or worsening symptoms of arterial insufficiency

Evidence Discussion

Upper extremity PVD

Duplex ultrasound (DU) is the initial imaging modality for assessment of patients with symptoms of upper extremity arterial occlusive disease including arm/hand claudication, non-healing wounds, blue discoloration, or a unilateral cold, painful, and pulseless hand.

DU is a non-invasive, cost-effective method for screening for arterial disease of the upper extremity. It has high sensitivity and specificity when compared to CT angiography (CTA) and MR angiography (MRA). CTA and MRA also evaluate anatomic location of disease but are reserved for confirmed vascular disease, suspected fibromuscular dysplasia of the brachial artery, and/or pre-operative planning. They are not first line imaging studies due to the higher risks associated with their use and the cost.

Post-revascularization surveillance with DU has been established as a reliable method to monitor the intervention for recurrence of disease. The time intervals for surveillance

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have been established at one and six months post-intervention, then yearly. If at any time, there are new signs or symptoms of disease, repeat duplex imaging is supported.

If initial duplex demonstrates high-grade stenosis or occlusion of the subclavian artery, advanced imaging is NOT indicated unless the individual is symptomatic with arm claudication or signs of hypo-perfusion of the vertebral artery with recurrent dizziness.

Subclavian Steal refers to a hemodynamically significant stenosis or occlusion of the subclavian/innominate artery which results in the reversal of blood flow in the vertebral artery (VA). Signs/Symptoms associated with this syndrome include:

- Physical examination with a >15mmHg discrepancy in blood pressure between two arms
- Supraclavicular bruit
- Symptoms of vertebrobasilar insufficiency, including vertigo and limb paresthesia particularly with use of the ipsilateral arm

Thoracic outlet syndrome (TOS) refers to compression of the neurovascular structures within the thoracic outlet as they pass from the neck and thorax to the axilla.

- There are three types of TOS: neurogenic, arterial and venous.
- Neurogenic TOS refer to **Brachial Plexus (PN-4.1)** in the Peripheral Nerve and Neuromuscular Disorders (PNND) Imaging
- Venous TOS refer to **Upper Extremity Venous Imaging (PVD 4.2)**

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Renovascular Hypertension/Renal Artery Stenosis (PVD-6.6)

PVD.AI.0006.6.A
v1.0.2027

Criteria

Initial imaging

- MRA Abdomen (CPT® 74185) or CTA Abdomen (CPT® 74175) or US kidney retroperitoneal (CPT® 76775) and/or Doppler (CPT® 93975, 93976, 93978, or 93979 if expertise is available) are considered medically necessary when there is documentation of **any** of the following:
  - Individual is adherent to full doses of three blood pressure medications (including a diuretic) yet has still not achieved goal
  - Sudden and persistent worsening of previously controlled hypertension
  - Onset of hypertension younger than 30 years of age
  - Malignant hypertension with coexistent evidence of acute end-organ damage (acute renal failure, new visual or neurological disturbance and/or advanced retinopathy) or flash pulmonary edema
  - Individuals who develop hypertension (≥140/90) within the first 20 weeks of pregnancy when hypertension persists >12 weeks post-partum
  - New or worsening renal function/increasing creatinine (especially after the administration of an ACE inhibitor or with angiotensin receptor blocking agent)
- Carotid duplex (CPT® 93880) is considered medically necessary to screen for carotid involvement in individuals with documented or highly suspicious renal artery stenosis due to fibromuscular dysplasia (mostly women between 15 and 50 years of age).

Screening

CTA Abdomen (CPT® 74175) or MRA Abdomen (CPT® 74185) is considered medically necessary to screen for renovascular fibromuscular dysplasia in hypertensive individuals with documented cervicocephalic fibromuscular dysplasia. The assessment of other vascular beds should be considered if supported by suggestive symptoms or medical history.

Carotid duplex (CPT® 93880) is considered medically necessary to screen for carotid involvement in individuals with documented or highly suspicious renal artery stenosis due to fibromuscular dysplasia (mostly women between 15 and 50 years of age).

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Repeat imaging post revascularization

- CTA Abdomen (CPT® 74175), or MRA Abdomen (CPT® 74185), or CT Abdomen with contrast (CPT® 74160) is considered medically necessary after stent placement at the following intervals:
  - 1 month post-procedure
  - 6 months post-procedure
  - 12 months post-procedure
  - Then annually

Evidence Discussion

Renovascular Hypertension

The American Heart Association 2017 guidelines on hypertension estimated renovascular disease to be the source of 5-34% of all cases. Multiple studies have shown that intervention is not more effective than medical therapy in most cases as reviewed by the KDIGO conference in 2022; however, it is noted that these recommendations continue to evolve. While duplex ultrasound is the preferred imaging modality, patients with compromised renal function or technical limitations due to body habitus may require CT/MR imaging for monitoring.

Current recommendations for renal artery screening in the setting of hypertension refractory to medical therapy include the following:

- Individual is adherent to full doses of three blood pressure medications (including a diuretic) yet has still not achieved goal
- Sudden and persistent worsening of previously controlled hypertension
- Onset of hypertension younger than 30 years of age
- Malignant hypertension with coexistent evidence of acute end-organ damage (acute renal failure, new visual or neurological disturbance and/or advanced retinopathy) or flash pulmonary edema
- Individuals who develop hypertension (≥140/90) within the first 20 weeks of pregnancy when hypertension persists >12 weeks post-partum o New or worsening renal function/increasing creatinine (especially after the administration of an ACE inhibitor or with angiotensin receptor blocking agent)

Fibromuscular dysplasia carries a higher risk of concomitant renal and carotid artery involvement. Screening of both anatomic regions is considered medically necessary upon diagnosis.

Post-intervention imaging with CT/MR imaging at standard 1/6/12 month intervals followed by annual imaging to assess for stent patency follow standard recommendations for non-coronary interventions. Additional surveillance is not indicated in the absence of symptoms.

Renal artery revascularization has not been shown to be more effective than medical therapy in most situations and should not be pursued except in extreme cases, or if there is concern for Takayasu arteritis or fibromuscular dysplasia. Gadolinium agents may be contraindicated in individuals with severe renal disease or on dialysis due to the risk of developing nephrogenic systemic sclerosis.

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Median Arcuate Ligament Syndrome, Nutcracker Syndrome and Other Abdominal Vascular Compression Syndromes (PVD-18)

PVD.AI.0018.A
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Median Arcuate Ligament Syndrome

Codes included

CPT®	Description
74175	Computed tomographic angiography, abdomen, with contrast material(s), including noncontrast images, if performed, and image post-processing
74185	Magnetic resonance angiography, abdomen, with or without contrast material(s)
93975	Duplex scan of arterial inflow and venous outflow of abdominal, pelvic, scrotal contents and/or retroperitoneal organs; complete study
93976	Duplex scan of arterial inflow and venous outflow of abdominal, pelvic, scrotal contents and/or retroperitoneal organs; limited study

Criteria

Initial Imaging

- Duplex Doppler Ultrasound of Mesenteric Arteries (CPT® 93975 or 93976) is considered medically necessary as the initial imaging.
- CTA or MRA Abdomen (CPT® 74175 or 74185) is considered medically necessary for **either**:
  - US results are equivocal
  - Pre-operative planning

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Repeat Imaging

- Surveillance imaging is considered **not** medically necessary post-operatively in the absence of abdominal symptoms.

Evidence Discussion

Median arcuate ligament syndrome (MALS) is a non-atherosclerotic cause of chronic mesenteric ischemia.

Patients are typically younger with an average age range of 30-50 years old and a female to male ratio of 4:1.

Patients may have symptoms of postprandial abdominal pain, nausea, vomiting, food aversion, or weight loss. Symptoms are nonspecific, so MALS may be considered a diagnosis of exclusion.

Imaging will demonstrate compression of the celiac artery by fibers of the median arcuate ligament, but this is a nonspecific finding and may be seen in the asymptomatic population.

The condition is believed to be mediated by foregut ischemia caused by compression of the celiac artery, as well as neuropathic pain arising from compression of the celiac ganglion.

Treatment is generally surgical, via a variety of approaches.

Left Renal Vein Compression ("Nutcracker") Syndrome

Codes included

CPT®	description
93975	Duplex scan of arterial inflow and venous outflow of abdominal, pelvic, scrotal contents and/or retroperitoneal organs; complete study
93976	Duplex scan of arterial inflow and venous outflow of abdominal, pelvic, scrotal contents and/or retroperitoneal organs; limited study
74174	Computed tomographic angiography, abdomen and pelvis, with contrast material(s), including noncontrast images, if performed, and image post-processing
72198	Magnetic resonance angiography, pelvis, with or without contrast material(s)

CPT®	description
74185	Magnetic resonance angiography, abdomen, with or without contrast material(s)

Criteria

Initial Imaging

- Abdominal duplex (CPT® 93975 or 93976) is considered medically necessary as the initial imaging to confirm left renal vein compression syndrome.
- CTV or MRV Abdomen and Pelvis (CPT® 74174) or (CPT® 74185 and 72198) is considered medically necessary for pre-operative planning when left renal vein compression syndrome is confirmed by duplex ultrasound.

Repeat imaging

- Post-operative follow-up imaging is considered **not** medically necessary in the absence of symptomatology.

Background and Supporting Information

Patients may present with symptoms related to compression of the left renal vein between the aorta and superior mesenteric artery. A less common presentation ("posterior nutcracker syndrome") is related to compression of a retroaortic (or circumaortic) left renal vein between the aorta and vertebral body.

The radiologic finding may be asymptomatic or considered a normal variant.

Signs/symptoms may include hematuria, proteinuria, flank pain, pelvic congestion/ associated pain in females, varicocele in males.

There may be an overlap in symptom complex with individuals who have pelvic congestion syndrome, iliac vein compression (May-Thurner).

There is no single accepted treatment modality. Approaches will range from conservative/medical (especially in younger patients), to endovascular, to open/ laparoscopic/robotic surgical.

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Claudication and Critical Limb Ischemia (PVD-7.1)

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Criteria

- Resting ABI for initial evaluation of suspected PAD. This can be accomplished at the bedside as part of the physical examination or requested as CPT® 93922 (limited Doppler ultrasound) or CPT® 93923 (multi-level complete Doppler ultrasound).
  - CPT® 93923 is considered medically necessary once.
  - Follow-up studies are considered medically necessary with CPT® 93922.
  - Post-exercise ABI (CPT® 93924) is considered medically necessary if the resting ABI is >0.89 and PAD is still highly suspected clinically.
- History and physical suggestive of PAD include:
  - History
    - Claudication- reproducible calf or thigh cramping with exertion that is relieved completely with rest
    - Critical limb ischemia
    - Rest pain suggestive of ischemia-pain in the ball of foot when the leg is in an elevated position particularly at night
    - Distal non-healing wound or punched out ulcer with sharply demarcated edges present for >2 weeks with no evidence of healing, i.e., presence of granulation tissue
  - Physical Examination
    - Abnormal lower extremity pulse examination
    - Vascular bruit
    - Non-healing lower extremity wound
    - Lower extremity gangrene
    - Other suggestive lower extremity physical findings (e.g., elevation pallor/ dependent rubor)
    - Atrophic nails, hair loss, shiny skin
- If resting ABI (CPT® 93922) is normal (0.9 to 1.3) and disease is still suspected:
  - Differentiate from “pseudoclaudication”. See **Lumbar Spinal Stenosis (SP-9)** in the Spine Imaging Guidelines
  - Re-measure ABI after exercise (CPT® 93924)
  - A TBI (toe-brachial index) may be used as further screening in individuals with ABI’s ≥1.4.

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- Advanced imaging is considered medically necessary only if there is consideration for invasive therapy, not to confirm diagnosis.

- Duplex ultrasound (CPT® 93925 bilateral study or CPT® 93926 unilateral study) and Doppler studies are adjuncts to abnormal ABI that are considered medically necessary to identify location and extent of disease once there has been a decision for revascularization.
- MRA Aorta and Pelvic vessels, and Lower extremities (CPT® 74185, CPT® 73725 and CPT® 73725), or CTA with run-off (CPT® 75635) are considered medically necessary **after** an abnormal ABI or abnormal arterial duplex study for **ANY** of the following:
  - Potentially limb-threatening vascular disease evidenced by:
    - Skin breakdown
    - Non-healing ischemic ulcers
    - Resting leg pain
    - Gangrene
  - Blue Toe Syndrome:
    - Hyperviscosity syndrome
    - Hypercoagulable states
    - Vasculitis
    - Emboli from aortic plaque or mural thrombus
      - To evaluate for an embolic source, the following studies are considered medically necessary
        - CTA chest (CPT® 71275) OR MRA Chest (CPT® 71555) AND
        - CTA abdomen and pelvis (CPT® 74174), CTA aorta with run-off (CPT® 75635), MRA abdomen and pelvis (CPT® 74185 and CPT® 72198), OR MRA abdomen with run off (CPT® 74185, CPT® 73725 and CPT® 73725)
        - See also **Transthoracic Echocardiography (TTE) Indications/Initial Evaluation (CD-2.2)**, **Transesophageal Echocardiography (TEE)-Indications (CD-2.5)**, **CT Heart for Evaluation of Cardiac Structure and Morphology (CD-4.6)**
  - Pre-operative planning for intermittent claudication (i.e., non-limb threatening ischemia) AND there is documentation of both of the following:
    - Failed 3-months of conservative medical therapy (physician supervised walking/ exercise program plus medical therapy)
    - Functional disability (e.g., exercise impairment sufficient to threaten the individual's employment or to require significant alterations in the individual's lifestyle)
  - CTA Lower Extremity (CPT® 73706) OR MRA Lower Extremity (CPT® 73725) is considered medically necessary for evaluation of PVD when aortoiliac disease

is not a concern or the state of the aorta and iliac arteries is already known as documented in the clinical history.

Note:

MRA Pelvis (CPT® 72198) should not be requested/billed with CPT® 74185, CPT® 73725 and CPT® 73725.

Evidence Discussion

Peripheral arterial disease (PAD) is a chronic, progressive atherosclerotic disorder characterized by partial or complete obstruction of arteries supplying the lower extremities. Although PAD affects a large population worldwide, the majority of individuals remain asymptomatic, with only a minority developing clinically evident disease such as intermittent claudication (IC), ischemic rest pain, or tissue loss (Writing Committee Members et al., 2024; Horvath, 2022).

The natural history of PAD is generally favorable in asymptomatic patients and those with IC. Longitudinal studies suggest that only a small proportion of asymptomatic individuals progress to IC over time, and even among patients with IC, progression to chronic limb threatening ischemia (CLTI) or limb loss is uncommon. Consistent with this, patients with IC have a low annual risk of major amputation, typically well below 1%, reflecting the relatively benign limb-related course of claudication in most cases.

Given this favorable prognosis, first-line management for IC emphasizes conservative strategies, including aggressive cardiovascular risk factor modification (e.g., smoking cessation, lipid and blood pressure control) and structured exercise therapy. Supervised exercise therapy has been shown to significantly improve functional capacity and walking distance, with randomized trials and meta-analyses demonstrating improvements of approximately 50% to 200% compared with usual care, with benefits sustained over time. With optimal medical therapy and lifestyle modification, only a small minority of patients progress to advanced ischemia requiring revascularization or amputation (Writing Committee Members et al., 2024).

The ankle–brachial index (ABI) is the primary noninvasive diagnostic test for PAD and is recommended as the initial evaluation in patients with suspected disease. An ABI value of <0.90 is diagnostic of PAD and corresponds to hemodynamically significant arterial stenosis, with reported sensitivity of approximately 75%–79% and specificity up to 96% when compared with angiographic standards. The ABI is inexpensive, widely available, and avoids both ionizing radiation and contrast exposure, making it well suited for outpatient use (Writing Committee Members et al., 2024).

When PAD is confirmed and further anatomical detail is required, arterial duplex ultrasonography is typically the next step. Duplex ultrasound combines B mode imaging with Doppler spectral analysis to assess vascular anatomy and hemodynamics and

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has demonstrated diagnostic accuracy comparable to advanced imaging modalities in many settings. It is noninvasive, cost-effective, and avoids radiation and contrast administration (Writing Committee Members et al., 2024).

Advanced imaging techniques—including computed tomography angiography (CTA), magnetic resonance angiography (MRA), and catheter-based angiography (CA)—are generally reserved for patients being considered for revascularization. CTA offers high spatial resolution but involves exposure to ionizing radiation and iodinated contrast, which carries risks of allergic reactions and contrast-induced nephropathy. MRA provides excellent vascular visualization without radiation; however, gadolinium-based contrast agents may rarely cause allergic reactions and have historically been associated with nephrogenic systemic fibrosis in patients with severe renal dysfunction, although this risk has been substantially reduced with newer agents. Additionally, MRA may be contraindicated in some patients with incompatible metallic implants (ACR Manual on Contrast Media, 2026).

Catheter angiography remains the gold standard for vascular imaging but is invasive and associated with procedural risks, including arterial injury, embolization, thrombosis, and complications related to vascular access, as well as radiation and contrast exposure (Pollack et al. 2012).

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Popliteal Artery Entrapment Syndrome (PVD-7.2)

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Criteria

- Diagnosis of popliteal artery stenosis or occlusion due to compression by adjacent muscle and tendons all of the following are considered medically necessary:
  - Resting ABI (CPT® 93922 OR 93923) AND/OR Post-Exercise ABI (CPT® 93924) AND
  - Ultrasound (CPT® 93926 unilateral study) AND
  - Either CTA Lower Extremity (CPT® 73706), or MRA Lower Extremity (CPT® 73725).
  - CT or MRI Lower Extremity (contrast as requested) if requested by the operating surgeon

Evidence Discussion

Popliteal Artery Entrapment

Popliteal artery entrapment syndrome is a nonatheromatous cause of lower extremity ischemic symptoms. It is caused by abnormal embryologic development of the structures in the popliteal fossa. The symptoms are caused by compression of the popliteal artery by the muscles or fibrous bands. The typical presentation is claudication symptoms in physically active young men who have normal pulse examination.

Popliteal artery entrapment syndrome is typically seen in young men (age 20 to 40) but is not exclusive to this gender or age group.

Due to its unusual nature and presentation, ultrasound, CT Angiography, or MR Angiography of the lower extremity is supported for diagnosis. Since it is critical to understand the anatomic relationships of the muscles to the vessels in the popliteal fossa, CT or MRI of the lower extremity is supported if requested by the surgeon for pre-operative planning.

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Arterial Imaging for Free Flaps in Reconstructive Surgery (PVD-7.5)

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Criteria

- Breast reconstruction preoperative planning: See **Breast Reconstruction (BR-3)** in the Breast Imaging Guidelines
- Head and neck reconstruction: CTA or MRA of bilateral lower extremities, CTA aorta with run-off, or MRA abdomen with bilateral lower extremity MRA is considered medically necessary to evaluate the peroneal artery for planned fibular flap.

Evidence Discussion

The fibular free flap is the preferable flap for mandibular reconstruction (Le, 2022) . Its use can be limited by variations in vascular anatomy, peripheral vascular disease affecting the lower extremities, or previous trauma/surgery involving the donor site. This flap is based on the peroneal artery, whose absence, typically does not affect the pedal circulation. However, there are vascular variants which can compromise the circulation of the foot (Abou-Foul 2017; Holze 2010; Kim 1989). When these anatomical variants are encountered, the flaps and/or the limbs can be compromised. Pre-operative mapping of both legs is critical to identifying these variants, choosing the best reconstructive plan and preventing surgical and donor site complications (Ma et al., 2021; Abou-Foul et al., 2017).

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Arteriovenous Malformations (AVMs) (PVD-9.1)

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- See **Pulmonary AVMs (CH-24.1)** in the Chest Imaging Guidelines
- See **Arteriovenous Malformations (AVMs) and Related Lesions (HD 12.2)** in the Head Imaging Guidelines
- See **Arteriovenous Malformations (AVMs) and Fistulas (PEDPVD-2.5)** in the Pediatric Peripheral Vascular Disease Imaging Guidelines
- See **Pelvic Pain/Dyspareunia, Female (PV-11.1)** in the Pelvis Imaging Guidelines

Criteria

Initial imaging

- Ultrasound with Doppler is considered medically necessary as an initial examination for superficial lesions in the limbs.
  - Large lesion characterization may be limited by ultrasound imaging window.
  - Ultrasound is also limited in evaluating AVM relationship to airway or bony structures.

Evaluation and surveillance

- MRI without contrast or without and with contrast of the affected body part is the study of choice for abdominal AVMs and deep tissue (below the skin) AVMs in the limbs.
- MRA (contrast as requested) of the affected body part is considered medically necessary for evaluation and surveillance of known AVMs.
- It is unusual for both MRI and MRA to be necessary for routine treatment response or surveillance imaging of AVMs, but both may be considered medically necessary for pre-operative planning.
- CT and CTA can also be used to characterize AVMs and their relationship to normal structures but is generally not better than MRI and has associated radiation risks.
  - CT with contrast and/or CTA (contrast as requested) of the affected body part is considered medically necessary when MRI and/or MRA is inconclusive or contraindicated.

Post-embolization

- Advanced imaging is considered medically necessary one-time post-embolization to evaluate for successful resolution of the AVM.

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- Additional imaging (same study performed pre-procedure or as requested by the treating provider) is considered medically necessary for treatment planning purposes if resolution of the AVM was not achieved.

Background and Supporting Information

Arteriovenous malformations are characterized by a network of multiple abnormal vascular channels interposed between enlarged feeding arteries and draining veins. The arteriovenous fistula has a single communication interposed between a feeding artery and a draining vein. The normal capillary bed is absent in both lesions. Both lesions may have an aggressive clinical course and are characterized by a reddish pulsatile mass which has a thrill or bruit. Though often recognized at birth, these lesions may grow and present near adolescence.

PVD Imaging Guidelines

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PVD.AI.0009.1.A
v1.0.2027

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Complications

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Vascular Graft Infection (PVD-21)

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Suspected or Known Vascular Graft Infection

Criteria

Clinical concern for vascular graft infection

Imaging of the affected vascular segment is considered medically necessary for the diagnosis of suspected vascular graft infection and/or treatment planning for known vascular graft infection as follows:

- Duplex arterial ultrasound and/or CTA or MRA of the affected arterial segment
- CTA or MRA of proximal and/or distal vascular beds of the affected segment for operative planning as requested by the surgeon (or provider in consultation with the performing surgeon)
- Indium 111 (111In)–labeled white blood cell (WBC) or Gallium-67 citrate studies (CPT® 78800, CPT® 78801, CPT® 78802, or CPT® 78803)
- PET/CT (CPT® 78815) for clinical suspicion of aortic infection (graft or native aorta) when **both** of the following apply:
  - CT-angiogram is equivocal/indeterminate AND
  - Indium-111 or Gallium-67 studies have not been performed **and** are not available or not technically feasible.

Evidence Discussion

Infection of vascular grafts is uncommon but serious and potentially life-threatening. Clinical presentations are variable, and imaging may be necessary to identify and/or define extent of infection, as well as for surgical planning.

Ultrasound is an inexpensive imaging modality that may identify findings associated with infection, such as fluid collections and pseudoaneurysm. This method is a considered a reasonable first-line modality to image extracavitary infection, but utility in evaluating intracavitary grafts and associated infection is limited.

CTA is a commonly used modality to evaluate intracavitary grafts, but is also useful in evaluating extracavitary graft, especially for surgical planning. Disadvantages include contrast exposure, and limited sensitivity/specificity.

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MRI may also be useful in evaluating vascular grafts and allows for good soft tissue resolution. Disadvantages include generally higher cost than CT scan, longer acquisition times, and limitations in use when patients have intracardiac devices and/or renal disease.

WBC scintigraphy, as well as PET/CT scan, allow for more definitive identification of infection, compared with CT scans. WBC scintigraphy may be limited due to the time needed for the study; while PET/CT may be limited due to low specificity.

PVD Imaging Guidelines

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PVD.PA.21.A
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Suspected Retroperitoneal Bleed (PVD-20)

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Criteria

Imaging

Any of the following studies is considered medically necessary to evaluate for retroperitoneal bleed:

- CT Abdomen and Pelvis with contrast (CPT® 74177)
- CT Abdomen and Pelvis with and without contrast (CPT® 74178)
- CTA Abdomen and Pelvis (CPT® 74174)

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Venous Procedures

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Imaging for Hemodialysis Access (PVD-8)

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Arterial Evaluation and Venous Mapping Prior to AV Fistula (PVD-8.1)

Criteria

- Imaging prior to AV fistula creation is considered medically necessary:
  - For vessel mapping CPT® 93985 or 93986
  - MRA Upper Extremity (CPT® 73225) may be needed if duplex imaging is equivocal.
- Arterial evaluation to assess arterial suitability (size, degree of stenosis and calcification) prior to AV fistula creation is considered medically necessary as follows:
  - CPT® 93930 or CPT® 93931 can be used to report upper extremity arterial evaluation.
- Venous mapping (CPT® 93970 or CPT® 93971) is considered medically necessary to assess venous suitability prior to AV fistula creation.

Hemodialysis Access Imaging (PVD-8.2)

Criteria

- Indications for Duplex ultrasound (CPT® 93990) of hemodialysis access include but are not limited to:
  - Individuals with decreased flow rates during hemodialysis
  - Development of arm swelling or discomfort after access placement surgery or a hemodialysis session
  - Prolonged immaturity of a surgically created AV fistula
  - Suspected pseudoaneurysm
  - Suspected AV fistula or graft stenosis
  - Known or suspected fluid collection adjacent to an AV fistula or graft
  - One Duplex US (CPT® 93990) can be performed after a surgically created AV fistula for assessment, although it is not generally needed.
- Central venous stenosis can cause new dialysis access to fail to mature or cause the premature failure of existing fistulas/grafts.

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- CT Chest with contrast (CPT® 71260), or CTA Chest (CPT® 71275), or MRA Chest (CPT® 71555) is considered medically necessary when there is documentation of either:
  - Signs and symptoms of central venous stenosis including:
    - Arm swelling
    - Presence of numerous collateral veins
    - Prolonged bleeding from dialysis puncture sites
  - A history of pacemaker placement or previous tunneled dialysis graft, regardless of signs and symptoms

Evidence Discussion

Hemodialysis Access for creation and maintenance

Hemodialysis access imaging is required to assess options for creation of hemodialysis access as well as to evaluate for maturation, failure and complications related to the access and outflow central veins.

Prior to creation of a native arteriovenous fistula (AVF), venous duplex ultrasound should be performed of both upper extremities to assess for adequate vein for fistula creation on all patients. Vessel mapping should include arterial inflow assessment to assess size, degree of stenosis and areas of calcification that may exclude access creation. Advanced imaging (CT or MR) of the chest or upper extremity may be indicated to further assess abnormalities identified on duplex imaging or evidence of central venous outflow obstruction.

Duplex evaluation of hemodialysis access should be performed for patients with evidence of failed maturation, poor function of access or complication related to the use of the hemodialysis access by history, physical exam or functional parameters during dialysis. These parameters may include: elevated venous pressures, inefficient dialysis, and recirculation greater than 10-15% or decreased flow.

CT or MR of the chest may be indicated for patients with a history of central venous catheters or pacemaker/ICD wires, signs and symptoms of ipsilateral central venous stenosis including arm swelling, venous collaterals or prolonged bleeding after dialysis.

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PVD.AI.0008.0.A
v1.0.2027

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IVC Filters – Treatment (PVD-16.2)

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Criteria

- Prior to IVC filter insertion
  - An initial venous duplex is considered medically necessary to assess for the presence of thrombus in the femoral vein which would affect the approach (transjugular or transfemoral)
- For consideration of removal, CT or CTA Abdomen and Pelvis (CPT® 74177 or, 74174) is considered medically necessary for **any** of the following:
  - A KUB demonstrates tilting of the filter or malposition of one of the filter struts
  - New bilateral lower extremity swelling (venous duplex should be performed first)
  - Filter present for >12 months, with documentation stating intent to remove

Background and Supporting Information

- IVC filters are placed in individuals with known DVT that cannot be anti-coagulated, individuals with poor pulmonary reserve and high risk for DVT, or prophylaxis in trauma and surgical individuals.
- Most IVC filters inserted are retrievable and should be removed as soon as clinically feasible. After 12 months, removal of IVC filters can become technically more difficult.

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Post Iliac Vein Stenting/Angioplasty (PVD-17.1)

PVD.VI.0017.A
v1.0.2027

Criteria

Iliac venous stents can be placed after thrombolysis for DVT associated with May-Thurner's syndrome, DVT associated with extrinsic compression or for post thrombotic iliac obstruction.

- Duplex ultrasound is considered medically necessary as the initial evaluation for iliac venous stents for any of the following:
  - Surveillance of iliac venous stents
  - Worsening signs or symptoms including increased edema when stent malfunction is suspected
  - Post-operatively within the first month, at six months, twelve months, and then annually
- CTV or MRV Abdomen and Pelvis are considered medically necessary for an abnormal or indeterminate duplex.

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Upper Extremity Venous – Imaging (PVD-4.2)

PVD.AI.0004.1.A
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Criteria

Venous Insufficiency

- For symptoms of venous insufficiency including but not limited to unilateral pain and swelling of the upper extremity
  - Venous duplex upper extremities (CPT® 93970 or CPT® 93971) is considered medically necessary initially
  - If duplex ultrasound is non-diagnostic, the following studies are considered medically necessary:
    - MRV Upper extremity (CPT® 73225) and/or MRV Chest (CPT® 71555), or
    - CTV Upper extremity (CPT® 73206) and/or CTV Chest (CPT® 71275)
- For venous thoracic outlet syndrome, CTV Upper extremity (CPT 73206) or MRV Upper extremity (CPT 73225), and/or CTV Chest (CPT 71275) or MRV Chest (CPT 71555) is considered medically necessary.
  - For arterial thoracic outlet syndrome see **Upper Extremity PVD – Imaging (PVD-4.1**)
  - For neurogenic thoracic outlet syndrome see **Brachial Plexus (PN-4.1)**
- CT Chest with contrast (CPT® 71260) is considered medically necessary for Superior Vena Cava Syndrome (upper extremity and facial symptoms).
- **Either** of the following is considered medically necessary when stenting of the SVC is being considered:
  - MRV Chest (CPT® 71555)
  - CTV Chest (CPT® 71275)

Lymphedema of the Upper Extremity

When initial imaging with venous duplex has ruled out DVT, **either** of the following studies are considered medically necessary to evaluate for suspected lymphedema of the upper extremity:

- Lymphoscintigraphy (CPT® 78195)
- MR lymphangiography (CPT® 75801)

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Pre-operative Imaging for Lymphedema Surgery

Any/all of the following imaging studies are considered medically necessary for pre-operative imaging for physiologic lymphatic surgery (lymphovenous bypass or vascularized lymph node transfer):

- Lymphoscintigraphy
- ICG lymphoscintigraphy
- MR lymphangiography
- MRV of upper extremity and draining bed (MRV chest for upper extremity surgery)

Evidence Discussion

Upper Extremity Venous Imaging

Duplex ultrasound is the initial imaging modality for assessment of patients with symptoms of upper extremity venous occlusive disease or venous insufficiency including arm edema, pain and ulceration. Duplex imaging is limited in assessment of the proximal subclavian vein and central veins due to anatomic interference by the rib cage and lungs. MRV or CTV is considered medically necessary to assess these more proximal segments of the venous outflow and central venous structures including the innominate veins and SVC.

Advanced imaging is considered medically necessary for treatment planning in SVC syndrome and proximal venous intervention. Follow-up imaging after PTA and/or stenting for SVC syndrome or proximal vein occlusive disease may be approved assessment of stent patency and for recurrent symptoms.

SVC syndrome is caused by acute or subacute, intrinsic or extrinsic obstruction of the SVC, (ex: lung cancer, fibrosis, indwelling catheters/devices, thrombus). Other symptoms include dyspnea, headache and dizziness.

Thoracic Outlet Syndrome (TOS) refers to compression of the neurovascular structures within the thoracic outlet as they pass from the neck and thorax to the axilla. There are three types of TOS, neurogenic (see Brachial plexus-PN 4.1), venous and arterial (see Upper Extremity PVD-PVD 4.1). Venous TOS typically occurs in young athlete after a history of exertion of the limb, or in the presence of a central venous catheter which traverses the subclavian vein.

Lymphedema is caused by dysfunction of the lymphatic system. Primary lymphedema is a result of a congenital malformation of the lymphatic system, whereas secondary lymphedema is due to an exogenous cause that impairs the lymphatic system. Typical etiologies include trauma, chronic infection, cancer treatments including lymph node dissections and radiation therapy. Most cases of secondary lymphedema of the upper extremity are related to breast cancer and it's treatment. Due to the anatomic disruption

of the lymphatic system, there is accumulation of protein-rich interstitial fluid, persistent swelling and later fibro-adipose hypertrophy.

There are two categories of surgical management for lymphedema. Reductive/ablative techniques involve the direct excision or liposuction of the affected lymphedematous tissue. Physiologic techniques involve restoring lymphatic flow by creating alternative pathways for lymphatic flow out of the affected limb. The two major types of physiologic techniques are the lymphovenous bypass (LVB), and the vascularized lymph node transfer (VLNT).

Pre-operative imaging is necessary for surgical planning for the physiologic procedures. Lymphoscintigraphy can confirm the diagnosis, and identifies pre-operative and post-operative lymph node activity. ICG lymphoscintigraphy allows for pre-operative staging of lymphedema and maps the functional lymphatic channels. This study is limited to imaging of the superficial lymphatic channels. However, MR lymphangiography images the deeper lymphatic channels and may also be indicated pre-operatively. MRV is used for the evaluation of the venous system, to assess the fat and fluid composition of the limb, and to rule out occult malignancy. Identification of venous lesions is particularly important, as these outflow lesions may be contributing to the limb edema, and could compromise the success of the procedure if not corrected.

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Acute Limb Swelling (PVD-12)

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Superficial Venous Thrombosis (SVT) (PVD-12.1)

Criteria

- The diagnosis of superficial venous thrombosis is generally made on the basis of physical examination.
  - Duplex ultrasound (CPT® 93970, CPT® 93971) is considered medically necessary as the initial imaging if the diagnosis is equivocal
  - Follow-up duplex ultrasound (CPT® 93970, CPT® 93971) is considered medically necessary only if thrombus in the superficial systems is encroaching onto the deep venous system (saphenofemoral or saphenopopliteal junction)

Background and Supporting Information

Superficial venous thrombosis (SVT) refers to acute or chronic thrombosis of the superficial veins in both the upper (cephalic and basilic veins) and lower extremities (greater [great] saphenous vein, lesser [small] saphenous vein). Treatment: Elevation and warm compresses until pain and swelling subsides.

Acute Deep Venous Thrombosis (DVT) (PVD-12.2)

Criteria

- Duplex ultrasound (CPT® 93970 bilateral study or CPT® 93971 unilateral study) is considered medically necessary as the initial imaging study for any suspected DVT
  - Deep venous thrombosis can present as
    - Symptomatic
      - Swelling
      - Pain
      - Warmth
      - Erythema
      - Pain with dorsiflexion of the foot (Homan's Sign)
      - Or with progression, such as phlegmasia cerulean dolens

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  - Risk factors for DVT include age >40, obesity, malignancy, prolonged immobilization, hypercoagulability as well as those outlined in **Pulmonary Embolism (PE) (CH-25)** in Chest Imaging Guidelines.
- CTA/CTV Abdomen and pelvis with contrast are considered medically necessary to rule out IVC thrombus secondary to the filter when there is acute bilateral lower extremity swelling in an individual with a history of an IVC filter in place.
- When there is concern for proximal DVT (iliofemoral):
  - Focused abdominal duplex can generally visualize the iliac veins and IVC to determine the absence or presence of iliac vein thrombus in an individual. If the results are equivocal or indeterminate:
    - CTV or MRV Abdomen and Pelvis with contrast (CPT® 74174 or CPT® 74185 and 73725) is considered medically necessary.
- For request concerning abdominal vein thrombosis, see **Abdominal Veins other than Hepatic and Portal Veins (AB-43.2)** in the Abdomen Imaging Guidelines
- For proximal DVT's (iliac vein DVT's or in cases of phlegmasia (extensive DVT compromising arterial inflow), thrombectomy (rarely performed) or thrombolysis is considered medically necessary.
- If the cause of the DVT is found to be due to May-Thurner, see also **May-Thurner Syndrome (PVD-13.3)**

Background and Supporting Information

Deep venous thrombosis is characterized by thrombosis of a deep vein in either the upper (brachial, axillary, subclavian veins) or the lower extremity (soleus muscle veins, gastrocnemius muscle veins, peroneal, posterior tibial, popliteal, femoral or iliac veins).

Follow-up Imaging of Known DVT (PVD-12.3)

Criteria

- A repeat duplex ultrasound (CPT® 93970 bilateral study or CPT® 93971 unilateral study) is considered medically necessary in order to rule out proximal extension of a calf vein DVT in individuals who cannot be anticoagulated as follows:
  - One week after the initial diagnosis.
  - Serial imaging (up to 3 studies) over the first three weeks if calf DVT is not treated.
- The use of imaging during long-term anticoagulation therapy to determine venous recanalization or for the purpose of determining whether or not to continue anticoagulation therapy is not supported by medical evidence and is considered not medically necessary.
- The use of imaging for surveillance of ovarian vein thrombosis is not supported by medical evidence and is considered not medically necessary.

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Evidence Discussion

Ovarian vein thrombosis usually occurs in the setting of pregnancy and the post-partum period, or secondary to abdominal surgery, intra-abdominal infections or GYN malignancies. When diagnosed, these are treated with standard anticoagulation. Based on the available evidence, recanalization rate of the vessel after treatment is approximately 90%. There is no consensus on follow-up imaging for this condition (Riva et al., 2024; Monnet et al. 2024; Laouenan et al., 2025).

Follow-up Imaging After Venous Surgery (PVD-12.4)

Criteria

- Venous duplex (CPT® 93971 unilateral study) of the treated limb is considered medically necessary to rule out a DVT within seven days of endovenous ablation.
- Follow-up routine imaging is considered **not** medically necessary after other venous procedures including:
  - Saphenous vein ligation and stripping
  - Phlebectomy
  - Sclerotherapy

Generalized Bilateral Lower Extremity Edema (PVD-12.5)

Criteria

Pre-operative Imaging for Lymphedema Surgery

Bilateral lower extremity edema is multifactorial. Prior to any request for advanced imaging, a workup for causes of the edema should be instituted including echocardiogram to rule out congestive heart failure and laboratory studies to exclude renal insufficiency and liver disease, **and a venous duplex to rule out DVT and venous insuffiency.** If all testing is nondiagnostic, the following advanced imaging may be considered.

- Suspected abdominal or pelvic pathology
  - Abdominal ultrasound or duplex is the initial imaging
  - CT Abdomen and Pelvis or CT pelvis either with or without contrast can be performed if abdominal US is equivocal or indeterminate
- Suspected lymphedema
  - When initial noninvasive studies, such as ultrasound, are negative for venous valvular insufficiency **either** of the following advanced imaging studies is indicated:
    - Lymphoscintigraphy (CPT® 78195)

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- MRI lymphangiography (CPT® 73718)

Any/all of the following imaging studies are considered medically necessary for pre-operative imaging for physiologic lymphatic surgery (lymphovenous bypass or vascularized lymph node transfer):

- Lymphoscintigraphy
- ICG lymphoscintigraphy
- MR lymphangiography
- MRV of lower extremity and draining bed (MRV abdomen and pelvis for lower extremity surgery)

Unilateral Lower Extremity Edema (PVD-12.6)

Criteria

Initial imaging for unilateral lower extremity edema with duplex ultrasound (CPT® 93971, unilateral study) to rule out DVT and venous insufficiency is considered medically necessary.

- If there is concern for proximal DVT:
  - focused abdominal duplex to evaluate the iliac veins and IVC
  - CTV or MRV Abdomen and Pelvis (CPT® 74174 or CPT® 74185 and CPT® 72198) for indeterminate or equivocal duplex results.
- If there is concern for abdominal or pelvic pathology:
  - Abdominal/pelvic ultrasound or duplex
  - CT Abdomen and Pelvis, or CT Pelvis with or without contrast if the abdominal ultrasound is indeterminate or inconclusive

Background and Supporting Information

Unilateral edema favors localized causes of venous or lymphatic compromise, rather than systemic etiologies which tend to result in bilateral edema. Initial imaging is duplex ultrasound. This can assess for vascular and non-vascular causes, including DVT, venous reflux, popliteal cysts, hematoma, mass.

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Chronic Limb Swelling

Guideline Page

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Chronic Limb Swelling Due to Chronic Deep Venous Thrombosis (DVT)/May-Thurner Syndrome (PVD-13)

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Chronic DVT with Incompletely Lysed or Residual DVT (PVD-13.1)

Criteria

Individuals with incompletely lysed or residual DVT can develop post-thrombotic syndrome that can be characterized as chronic edema, venous stasis changes, pain, and in advanced cases, venous stasis ulceration.

- Imaging is considered medically necessary to evaluate for iliac venous obstruction from incompletely lysed thrombus in individuals with a history of proximal (iliofemoral) DVT who have developed post thrombotic syndrome.
  - Initial imaging is duplex (CPT® 93970 bilateral study or CPT® 93971 unilateral study)
  - Either a CTV or MRV Abdomen and Pelvis (CPT® 74174) or (CPT® 74185 and 72198) OR CTV Pelvis (CPT® 72191) or MRV Pelvis (CPT® 72198), or venography for treatment planning purposes
- Imaging for post-thrombotic syndrome is only considered medically necessary for **either**:
  - Signs and symptoms suggestive of a new acute DVT
  - Pre-operative planning for iliac vein/stenting for suspected iliac vein stenosis or occlusion

Background and Supporting Information

- Chronic deep venous thrombosis is defined as an acute DVT that is greater than 14 days old.
- Incompletely lysed DVT can cause luminal narrowing of the vein restricting venous outflow leading to stenosis or occlusion and /or can lead to valve dysfunction resulting in reflux of venous blood retrograde towards gravity. Both pathologies ultimately lead to chronic edema which can cause chronic pain and venous stasis disease.
  - The mainstay of treatment for chronic deep venous thrombosis is compression stockings.
  - Selected individuals may be a candidate for iliac vein angioplasty/stenting.

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Post-thrombotic Syndrome (PVD-13.2)

Criteria

- Imaging for post-thrombotic syndrome is considered medically necessary when:
  - There are signs and symptoms suggestive of a new acute DVT.
  - For pre-operative planning for iliac vein/stenting in the setting of known iliac venous obstruction in those with a history of a proximal (iliofemoral) DVT
- Imaging for post-thrombotic syndrome is considered not medically necessary for chronic swelling that has not changed in severity or character.

May-Thurner Syndrome (PVD-13.3)

Criteria

- CTV or MRV Abdomen and Pelvis (CPT® 74174, or 74185 and 72198) OR CTV Pelvis or MRV Pelvis (CPT® 72191 or 72198) is considered medically necessary in individuals with a history of **one** of the following:
  - Left lower extremity iliac DVT
  - Persistent left lower extremity edema OR varicose veins OR venous stasis ulcer despite surgical treatment (ablation, stripping) of superficial venous disease in that extremity
  - Persistent left lower extremity edema OR varicose vein OR venous stasis ulcer in the absence of saphenous vein reflux.
- Imaging and/or prophylactic treatment of May-Thurner syndrome, in the absence of acute or chronic DVT **or** chronic left lower extremity edema and its sequelae such as varicose veins or venous stasis ulcers, is **not** considered medically necessary
- For surveillance of previously placed iliac venous stents see **Post Iliac Vein Stenting/angioplasty (PVD-17.1)**

Background and Supporting Information

In approximately 25% of people, the right iliac artery overlies the left iliac vein over the fifth lumbar vertebrae and its pulsations can compress the vein increasing the risk of DVT in the left extremity. Treatment is with iliac vein angioplasty/stenting.

Pelvic Congestion Syndrome (PVD-13.4)

Criteria

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- Signs and symptoms of pelvic congestion syndrome include:
  - Chronic pelvic pain OR post-coital discomfort >6 months.
  - Associated symptoms can include the presence of labial varicosities or heavy menstrual periods.
- Initial imaging is via transvaginal or pelvic ultrasound to exclude other pathologies of chronic pelvic pain.
- CTV or MRV Abdomen and Pelvis (CPT® 74174, or 74185 and 72198) is considered medically necessary if initial ultrasound is inconclusive or non-diagnostic.

Evidence Discussion

Chronic lower extremity swelling may result from underlying venous pathology, including chronic deep venous thrombosis (DVT), May–Thurner syndrome (iliac vein compression), post-thrombotic syndrome (PTS), and pelvic congestion syndrome. May–Thurner syndrome is characterized by extrinsic compression of the left common iliac vein by the right common iliac artery, leading to venous outflow obstruction, venous stasis, and predisposition to iliofemoral DVT and chronic venous insufficiency (Harbin & Lutsey, 2020).

In patients presenting with unilateral lower extremity edema—particularly isolated left leg swelling or asymmetry (left greater than right) venous duplex ultrasound (DUS) of the lower extremity is recommended as the first-line diagnostic modality to evaluate for DVT.

If femoral or proximal DVT is identified, further evaluation with pelvic venous duplex ultrasound should be performed to assess for extension into the iliac veins or inferior vena cava (IVC), or for extrinsic compression such as mass effect or iliac vein compression (Li et al., 2023).

However, duplex ultrasound has recognized limitations in evaluating iliac vein thrombosis due to anatomic depth and overlying structures; therefore, cross-sectional imaging may be required when suspicion persists (Jain et al., 2018).

Computed tomography venography (CTV) or magnetic resonance venography (MRV) of the abdomen and pelvis is indicated in acute iliofemoral DVT identified on ultrasound, for treatment planning and assessment of proximal extent, suspected iliocaval thrombosis or stenosis when ultrasound is non-diagnostic or limited (e.g., bowel gas, body habitus) and patients with chronic unilateral edema, prior left iliac DVT, or signs of venous stasis disease without superficial venous insufficiency, to evaluate for occult iliac vein compression (e.g., May–Thurner syndrome). Cross-sectional imaging plays a key role in detecting iliocaval obstruction and guiding endovascular intervention planning in both acute and chronic venous disease (Li et al., 2023).

Additionally, in patients with recurrent symptoms following iliocaval stenting, CTV or MRV is appropriate to evaluate for in-stent restenosis or thrombosis.

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Post-thrombotic syndrome is a chronic complication following DVT, occurring in approximately 20–50% of patients with proximal DVT, and is characterized by persistent venous insufficiency, limb swelling, pain, skin changes, and ulceration. The pathophysiology involves venous obstruction and/or valvular incompetence following thrombus resolution (Corvino et al., 2025).

Management is primarily conservative, consisting of compression therapy and symptom control. Advanced imaging is generally not required unless there is concern for new or recurrent iliofemoral DVT or when intervention is being considered for significant iliac vein obstruction.

Pelvic congestion syndrome (PCS) is a potential cause of chronic pelvic pain, dyspareunia, or post-coital discomfort, resulting from pelvic venous insufficiency and varicosities. Initial imaging consists of transabdominal or transvaginal ultrasound to exclude other causes of pelvic pain, while advanced imaging (CTV or MRV) is indicated when ultrasound is inconclusive or for procedural planning. MRI, CT, and venography can further characterize pelvic varices and underlying venous obstruction, including associated conditions such as iliac vein compression (Balabuszek, Toborek, & Pietura, 2022).

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Chronic Limb Swelling Due to Venous Insufficiency/Venous Stasis Changes/ Varicose Veins (PVD-14)

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Venous Reflux (PVD-14.2)

Criteria

- A venous valvular insufficiency study (CPT® 93970 bilateral study or CPT® 93971 unilateral study) is considered medically necessary to diagnose presence of reflux in the greater saphenous vein as well as the size of the refluxing vein.
- A duplex ultrasound (CPT® 93970 bilateral study or CPT® 93971 unilateral study) is considered medically necessary within six months before treatment with intervention to demonstrate the presence of pathologic reflux (>500ms) within the greater and lesser saphenous veins and document vein size.
- A post-ablation venous ultrasound (CPT® 93970 bilateral study or CPT® 93971 unilateral study) is considered medically necessary within seven days post-procedure.
  - If thrombus is noted within the saphenofemoral junction, repeat imaging can be performed within seven days to assess for propagation into the deep system.
- Post-procedure assessment by imaging techniques is not considered medically necessary to confirm efficacy or outcome of the procedure.

Evidence Discussion

Venous insufficiency-– General information

- Venous insufficiency is characterized by failure of the venous blood to flow in its normal path of flow and instead refluxes backwards by the force of gravity usually secondary to malfunction of the venous valves.
- Risk factors include previous DVT, obesity, hereditary, and environmental factors such as prolonged standing on a hard surface.
- Venous insufficiency loosely includes the diagnosis of venous reflux, varicose veins, venous stasis ulcers, and spider/reticular veins.
- Diagnosis is made with a venous valvular insufficiency study which documents the presence of reflux (>500ms) in the greater saphenous vein as well as the size of the refluxing vein (3-15mm).

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- Treatment of superficial venous reflux is amenable to intervention in selected individuals who are symptomatic and have failed conservative therapy.
- Ultrasound mapping or monitoring techniques are considered medically necessary only to initially determine the extent and configuration of symptomatic varicosities or valvular insufficiency.

Venous reflux

- Symptoms of venous reflux include chronic edema, pain, and venous stasis ulcerations. Symptoms of venous reflux can be ameliorated with compression therapy with graded compression stockings, elevation, avoidance of prolonged standing and weight loss. Venous reflux can be seen in both the deep and superficial venous systems. Reflux within the deep system is not amenable to intervention.
- Treatment of deep venous reflux is via active compression with compression socks, pneumatic pumps, or specialized dressings such as Unna boots.
- Treatment of symptomatic superficial venous reflux is via endovenous laser or radiofrequency ablation of the greater or lesser saphenous vein resulting in closure of the vein allowing for venous blood to be rerouted to the deep venous system.
- Treatment of symptomatic superficial venous reflux can also be treated via saphenous vein ligation and stripping which has fallen out of favor but can be performed for a tortuous or enlarged (>15mm) great saphenous or small saphenous vein. One complication of endovenous ablation is deep venous thrombosis.

Varicose Veins

- If the varicosities remain symptomatic despite conservative therapy, varicose veins are treated with sclerotherapy or phlebectomy generally on the basis of size.
- Varicose veins are defined as enlarged, tortuous veins visible under the skin. Symptoms associated with varicose veins include aching and heaviness of the legs and pain/discomfort over the varicosities. Varicose veins can exist both in the absence and presence of venous reflux.
- Treatment involves conservative therapy such as compression stockings, avoidance of prolonged standing, intermittent elevation, weight loss (if applicable) and exercise which relieves the distention of the varicose veins ameliorating the symptoms.

Spider veins/reticular veins

- Spider veins are formed by the dilation of a cluster of blood vessels within the dermis – generally <3mm in diameter. Diagnosis is via physical examination. Spider veins are usually asymptomatic but can cause aching, burning, and tenderness in the area overlying the abnormal veins. Spider veins can exist in the absence or presence of venous reflux. The presence of spider veins should not be an indication for treatment of venous reflux.
- Treatment of spider veins is generally cosmetic except in certain cases and can be treated with sclerotherapy.

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