Aortic Disease

Clinical Guidelines for Medical Necessity Review

Version: V2.0
Effective Date: October 31, 2022

Important Notices

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Other Notices:

Guideline Information:

Disease Area: Cardiovascular
Care Path Group: Vascular Disease
Care Path Name: Aortic Disease
Type: [**X**] Adult (18+ yo) | [_] Pediatric (0-17yo)

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Care Path Overview

Care Path Clinical Discussion

Diseases of the aorta (aneurysms, dissections, and occlusive disease) are a leading cause of cardiovascular morbidity and mortality. The clinical manifestations of aortic disease vary widely. Potentially life-threatening diseases of the aorta can be asymptomatic. Aortic aneurysms occur throughout the aorta and are most common in the abdominal aorta (i.e., abdominal aortic aneurysm or AAA). Aortic dissections occur throughout the aorta. Symptomatic aortoiliac occlusive disease usually involves the distal aorta and iliofemoral arteries.

This aortic disease pathway provides a template for diagnosing and treating the broad spectrum of aortic disease.

The information contained herein gives a general overview of the pathway of this specific diagnosis, beginning with the initial presentation, recommended assessments, and treatment options as supported by the medical literature and existing guidelines. It should be noted that the care of patients can be complex. The information below is meant to support clinical decision-making in adult patients. It is not necessarily applicable to every case, as the entire clinical picture (including comorbidities, history, etc.) should be considered.

Key Information

- Aortic aneurysm: Most aortic aneurysms are asymptomatic and are found incidentally on physical exam or as part of an evaluation for another medical problem. Aortic aneurysms occur throughout the aorta but are most common in the abdominal aorta (AAA). Ruptured AAAs are the 15th leading cause of death in the US, and ruptured AAAs carry a high mortality risk.[1] For this reason, the Society for Vascular Surgery recommends prompt diagnosis, medical management, and (potential) surgical treatment of asymptomatic aortic aneurysms.[2]
    - Aortic aneurysms are most common in male smokers. Atherosclerosis, hypertension, and peripheral artery disease (PAD) are associated with aneurysm formation. In addition, AAAs are familial; a 1st degree relative with an AAA puts a patient at higher risk for developing an abdominal aortic aneurysm. Aortic aneurysms are also associated with peripheral arterial aneurysms (e.g., femoral and popliteal artery aneurysms).
- Aortic dissection: Aortic dissection is uncommon and frequently presents as an acute limb or life-threatening condition. Aortic dissection is often described as the "great masquerader" due to its variable clinical presentation. Classic symptoms include abrupt onset chest pain that radiates to the back in a patient with concomitant hypertension or coronary artery disease (CAD). A physical exam may reveal pulse deficits or signs of end-organ ischemia.
    - Non-interventional therapies are the standard treatment for asymptomatic distal aortic dissections. Ongoing follow-up is recommended due to the risk of disease progression or aneurysmal degeneration of the dissected portion of the aorta. Computed tomographic angiography (CTA) and magnetic resonance angiography (MRA) are commonly used to diagnose, delineate the vascular anatomy of, and treat aortic dissections.
- Aorto-iliac occlusive disease (AIOD): AIOD typically presents with symptoms and signs of peripheral artery disease (PAD). Non-limb-threatening ischemia (e.g., intermittent claudication) typically presents as exertional leg muscle pain (ache or cramp) that resolves with rest. Limb-threatening ischemia or critical limb ischemia (CLI) is an advanced stage of PAD that manifests as ischemic rest pain, vascular ulcers, or gangrene.
    - Patients with AIOD often have a long history of tobacco use and cardiovascular disease. Physical exam findings include diminished or absent femoral pulses and additional signs of PAD (e.g., hair loss, muscle atrophy, skin changes).
    - The aorta and iliac arteries are the second most common blood vessels affected by PAD, second only to the blood vessels in the thigh (i.e., the femoral arteries).

Definitions

- **Aortic Aneurysm:** A dilation of the aorta that is 50 percent greater than the standard aortic diameter.[3]
- **Aortic Dissection:** A tear occurs in the aorta's inner layer, causing the inner and middle/outer layers to separate (dissect) as blood flows between the aortic tissue layers. This dissection typically creates both a "true" and "false" flow lumen in the aorta. As a result of this pathologic process, the normal blood flow may be slowed or stopped, or the aorta may rupture.
    - **Type A Aortic Dissections:** Dissections involving the ascending aorta require emergency interventional treatment due to the risk of retrograde dissection, coronary ischemia and aortic rupture. **Type B Aortic Dissections:** Dissections involving the descending aorta may be treated medically or with interventional therapies. The treatment type depends on factors such as how the underlying disease process manifests clinically.[4]
- **Aortoiliac Occlusive Disease:** Aortoiliac occlusive disease is the narrowing or blockage of the aorta or the iliac arteries which is typically caused by a buildup of atherosclerotic plaque.
- **Peripheral Artery Disease (PAD):** The narrowing or blockage of the arteries that carry oxygenated blood from the heart to the extremities. Atherosclerosis is the primary cause of PAD.
- **Open/Traditional Vascular Procedures**: Revascularization or repair of the aorta and its branches utilizing open surgical techniques
- **Endovascular Procedures**: Aortic revascularization or repair using minimally invasive techniques (e.g., percutaneous or "mini" incisions) to treat aortic disease with angioplasty, stents or stent-grafts.
- **Hybrid Vascular Procedures:** A combination of both open surgical techniques and endovascular interventions to treat aortic disease.
- **Non-limb-threatening ischemia (e.g., intermittent claudication):** Exertional leg muscle pain (ache or cramp) resolving with rest.
- **Limb-threatening ischemia or critical limb ischemia (CLI):** An advanced stage of peripheral artery disease (PAD) that manifests as ischemic rest pain, vascular ulcers, or gangrene.
- **Optimal Medical Care (OMC):** Risk factor modification in association with a home exercise program and (when appropriate) concomitant pharmacotherapy.
- **Ankle-brachial index (ABI):** A simple non-invasive test for PAD that compares the blood pressure measured at your ankle with the blood pressure measured at your arm. A low ankle-brachial index can indicate narrowing or blockage of the arteries in your legs. A markedly

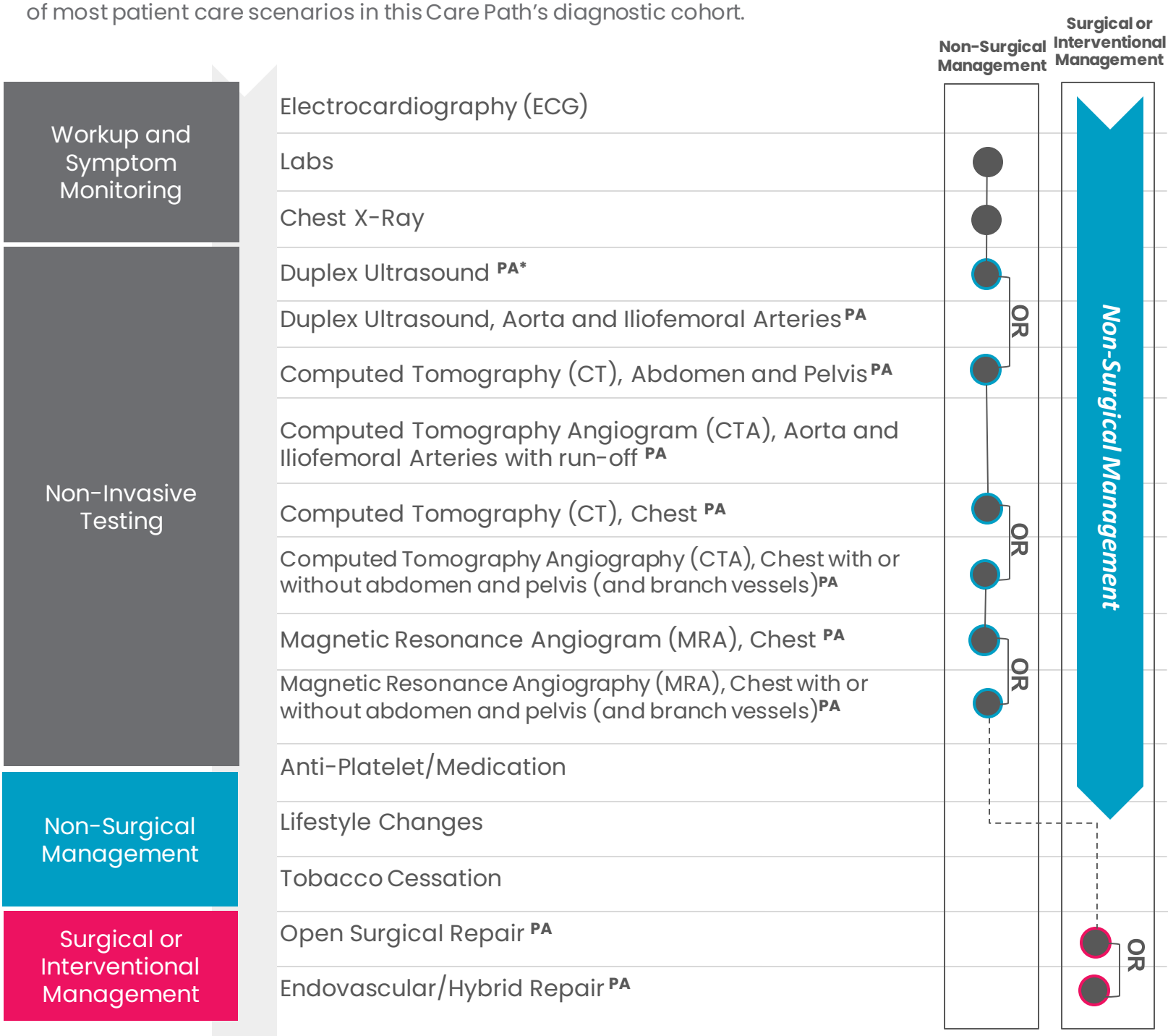
elevated ABI (i.e., greater than 1.3) is abnormal and suggests a non-compressible (stiff) artery.

Acute limb-threatening arterial ischemia and critical limb ischemia (acute or chronic) fall outside the scope of these guidelines.

Aortic Disease, Aortic Aneurysms

What is a "Cohere Care Path"?

These Care Paths organize the services typically considered most clinically optimal and likely to be automatically approved. These service recommendations also include the suggested sequencing and quantity or frequency determined clinically appropriate and medically necessary for the management of most patient care scenarios in this Care Path's diagnostic cohort.



Key

PA = Service may require prior authorization
★ = Denotes preferred service
AND = Services completed concurrently
OR = Services generally mutually exclusive

= Non-surgical management prior authorization group of services
= Surgical management prior authorization group of services
= Subsequent service
= Management path moves to a different management path

Aortic Disease, Aortoiliac Occlusive Disease

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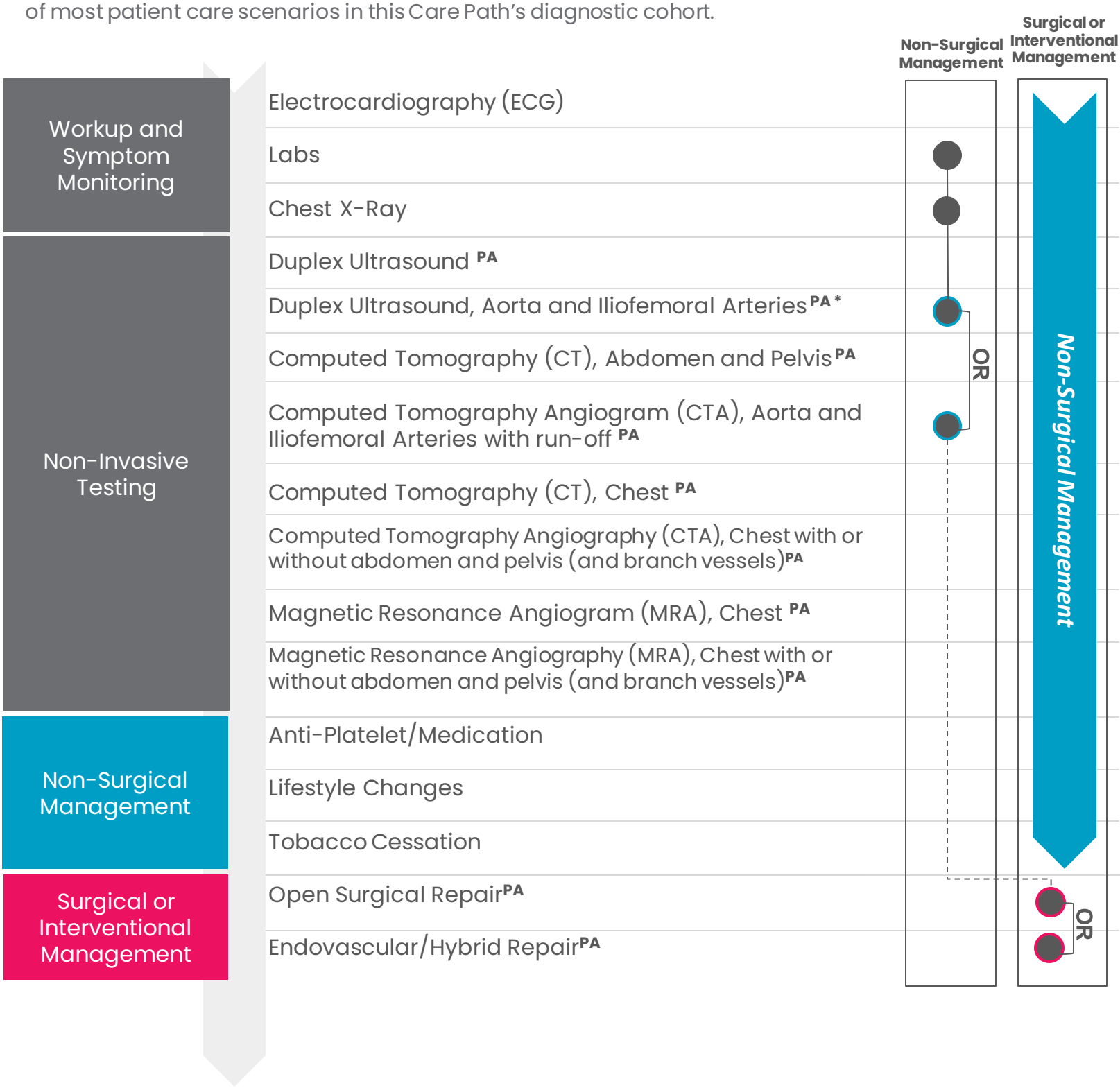

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Aortic Disease, Aortic Dissection

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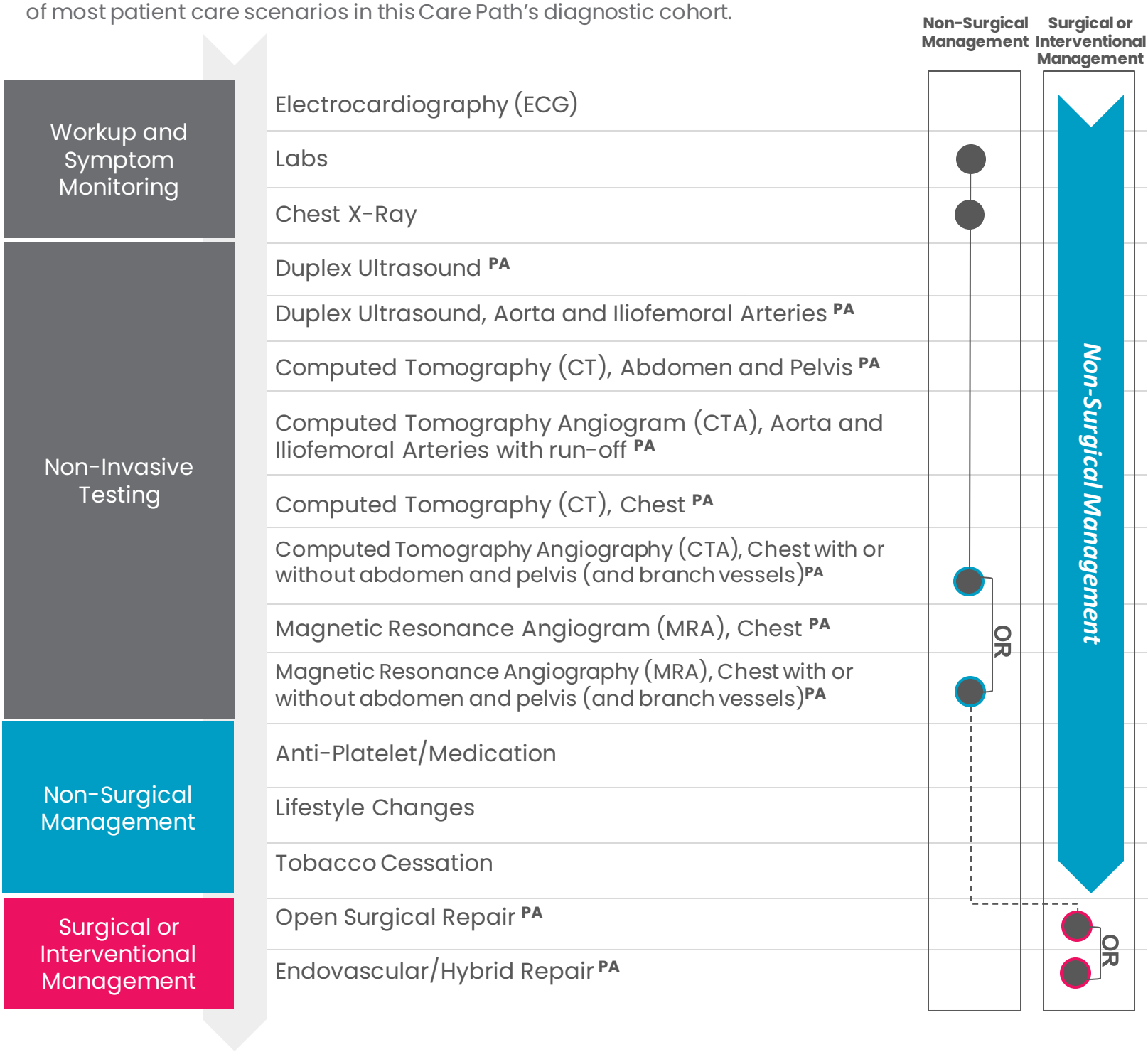

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Care Path Diagnostic Criteria

Disease Classification

Disease of the aorta (aneurysm, occlusive, dissection).

ICD-10 Codes Associated with Classification

ICD-10 Code	Code Description/Definition
I70.0	Atherosclerosis of aorta
I71.02	Dissection, aorta, abdominal
I71.03	Dissection, aorta, thoracoabdominal
I71	Aortic aneurysm and dissection
I71.0	Dissection of aorta
I71.00	Dissection of unspecified site of aorta
I71.010	Dissection of ascending aorta
I71.011	Dissection of aortic arch
I71.012	Dissection of descending thoracic aorta
I71.019	Dissection of thoracic aorta, unspecified
I71.2	Thoracic aortic aneurysm, without rupture
I71.40	Abdominal aortic aneurysm, without rupture, unspecified
I71.41	Pararenal abdominal aortic aneurysm, without rupture
I71.42	Juxtarenal abdominal aortic aneurysm, without rupture
I71.43	Infrarenal abdominal aortic aneurysm, without rupture
I71.60	Thoracoabdominal aortic aneurysm, without rupture, unspecified
I71.61	Supraceliac aneurysm of the abdominal aorta, without rupture
I71.62	Paravisceral aneurysm of the abdominal aorta, without rupture
I71.9	Aneurysm, descending thoracic, unruptured
I72.2	Aneurysm of renal artery

I72.3	Aneurysm of iliac artery
I72.8	Aneurysm of other specified arteries
I72.9	Aneurysm of unspecified site
I74	Arterial embolism and thrombosis
I74.0	Embolism and thrombosis of abdominal aorta
I74.01	Saddle embolus of abdominal aorta
I74.09	Other arterial embolism and thrombosis of abdominal aorta
I74.1	Embolism and thrombosis of other and unspecified parts of aorta
I74.10	Embolism and thrombosis of unspecified parts of aorta
I74.11	Embolism and thrombosis of thoracic aorta
I74.19	Embolism and thrombosis of other parts of aorta
I77.72	Dissection of iliac artery
I77.73	Dissection of renal artery
I77.79	Dissection of other specified artery
I77.8	Other specified disorders of arteries and arterioles
I77.81	Aortic ectasia
I77.811	Abdominal aortic ectasia
I77.89	Other specified disorders of arteries and arterioles
I79	Disorders of arteries, arterioles and capillaries in diseases classified elsewhere
I79.0	Aneurysm of aorta in diseases classified elsewhere
I79.1	Aortitis in diseases classified elsewhere
I79.8	Other disorders of arteries, arterioles and capillaries in diseases classified elsewhere

**Critical limb ischemia in association with any of the above diagnoses (acute or chronic) fall outside the scope of these guidelines.*

Presentation and Etiology:

Causes and Risk Factors

Abdominal Aortic Aneurysm (AAA)

- Usually asymptomatic; patients who present with symptomatic AAAs (e.g., abdominal or back pain) require emergency referral to a vascular surgeon.
- Risk factors include a family history of aortic or peripheral aneurysms, male sex, and a history of smoking.
- Aneurysm growth is associated with uncontrolled hypertension, ongoing tobacco use, and COPD (chronic pulmonary disease).

Thoracic/Thoracoabdominal Aneurysm (TAA)

- Usually asymptomatic; patients who present with symptomatic TAAs (e.g., chest or back pain) require emergency referral to a cardiothoracic or vascular surgeon.
- Risk factors include a family history of aortic or peripheral aneurysms, male sex, and smoking history.
- Aneurysm growth is associated with uncontrolled hypertension, ongoing tobacco use, and COPD (chronic pulmonary disease).
- Genetic and other connective tissue disorders (e.g., Marfan syndrome, Ehler Danlos syndrome) are associated with an increased risk of aortic aneurysm formation.

Thoracic/Thoracoabdominal/Abdominal Aortic Dissection:

- Asymptomatic aortic dissections are uncommon. They occasionally present in trauma patients. Patients who present with symptomatic aortic dissections (e.g., chest or back pain, ischemic end organs) require emergency referral to a cardiothoracic or vascular surgeon.
- Risk factors:
    - Uncontrolled hypertension
    - Atherosclerosis
    - Aortic aneurysm
    - Bicuspid aortic valve
    - Coarctation of the aorta

Clinical Presentation

Abdominal Aortic Aneurysm (AAA)

- Typically asymptomatic
- Symptomatic AAA may present with abdominal or back pain.

Thoracic/Thoracoabdominal Aneurysm (TAA)

- Typically asymptomatic
- A symptomatic thoracic or thoracoabdominal aneurysm may present with chest, back, or abdominal pain.

Thoracic/Thoracoabdominal/Abdominal Aortic Dissection

May present with the following:

- Chest, back, or abdominal pain
- Syncopal episode
- Absent or diminished peripherals
- Blood pressure differential in the extremities
- Symptoms (or signs) of end-organ ischemia (e.g., stroke, anuria, limb ischemia)

Typical Physical Exam Findings

The following physical findings may appear in a patient with an **abdominal aortic aneurysm (AAA)**:

- Pulsatile, expansile abdominal mass
- Pulsatile mass in the femoral or popliteal arteries (as aortic aneurysms are associated with peripheral aneurysms)

The following physical findings may appear in a patient with a **thoracic/thoracoabdominal aneurysm (TAA)**:

- Thoracic aortic aneurysms without an abdominal component will typically not be detected on physical examination.
- Pulsatile mass in the femoral or popliteal arteries (i.e., a patient who presents with a peripheral aneurysm should be screened for the presence of an aortic aneurysm as aortic aneurysms are associated with peripheral aneurysms)
- Cardiac murmurs (ascending thoracic aortic aneurysms can beassociated with a bicuspid aortic valve)

The following physical findings may appear in a patient with **thoracic/thoracoabdominal/abdominal aortic dissection**:

- The aorta does not lend itself to direct physical examination with the exception of the infrarenal abdominal aorta (i.e., palpation of aneurysmal degeneration in select patients).
- Aortic dissections can present with physical examination findings of end-organ ischemia (e.g., stroke, myocardial infarction, abdominal pain, decreased or absent pulses in an affected extremity, or a blood pressure discrepancy between the extremities).

Typical Diagnostic Findings

Diagnostic findings for **abdominal aortic aneurysm (AAA)** include:

- Duplex ultrasound of the abdominal aorta is the preferred initial radiologic study to detect AAA.
- CT scanning (with or without IV contrast) is an appropriate screening exam for patients in whom an ultrasound would not be expected to provide the necessary clinical information (e.g., morbid obesity).
- Medicare Part B covers an abdominal aortic screening ultrasound for patients with a family history of abdominal aortic aneurysms and for males between the ages of 65-75 who have smoked at least 100 cigarettes in their lifetime.[5]

Diagnostic findings for **thoracic/thoracoabdominal aneurysm (TAA)** include:

- CT scanning (with or without IV contrast) and MRA (magnetic resonance angiography) are the preferred modalities for imaging the thoracic or thoracoabdominal aorta.

Diagnostic findings for **thoracic/thoracoabdominal/abdominal aortic dissection** include:

- CT scanning (with IV contrast) and MRA (magnetic resonance angiography) are the preferred modalities for imaging the aorta if there is a suspicion of aortic dissection.
- CTA and MRA allow the clinician to identify the entry point and extent of the dissection and plan treatment and intervention.

Care Path Services & Medical Necessity Criteria

Non-invasive testing

Service: Duplex Ultrasound (Abdominal Aortic Aneurysm)

General Guidelines

- **Units, Frequency, & Duration:** Once.
- **Criteria for Subsequent Requests:** Follow-up imaging may be appropriate based on the patient's initial aortic diameter.[2]
- **Recommended Clinical Approach:** A follow-up duplex ultrasound for a patient with an abdominal aortic aneurysm is recommended based on the documented aortic diameter (as outlined below).[6]
- **Exclusions:** If the abdominal aortic aneurysm (AAA) diameter equals or exceeds 5.4 cm in diameter, recommend referral to vascular surgery (as opposed to additional imaging).

Medical Necessity Criteria

Indications

➔ **Duplex Ultrasound** is considered appropriate if **ANY** of the following is **TRUE**[2]:

- The patient requires screening or surveillance of a known abdominal aortic aneurysm and **ANY** of the following is true[7]:
  - Males between 65 and 75 years of age **AND** a history of tobacco use
  - Males 75 years or older and **ALL** of the following:
    - History of tobacco use and in otherwise good health
    - No previous screening ultrasound examination.
  - The patient has first-degree relatives with an AAA and **ANY** of the following:
    - Between 65 and 75 years of age
    - Older than 75 years and in good health
- The patient requires follow-up imaging and has **ANY** of the following[8]:
  - An initial aortic diameter greater than 2.5 cm but less than 3 cm, recommend rescreening after 10 years.
  - An initial aortic diameter between 3.0 and 3.9 cm, recommend surveillance imaging at 3-year intervals

    - An initial aortic diameter between 4.0 and 4.9 cm, recommend surveillance imaging at 12-month intervals
    - An initial aortic diameter between 5.0 and 5.4 cm, recommend surveillance at 6-month intervals[9]
- The presence of a peripheral pulsatile mass (e.g., femoral or popliteal) warrants an ultrasound examination of the peripheral arteries (i.e., femoral and popliteal arteries) and an imaging study of the aorta (as there is an association between the presence of peripheral aneurysms and aortic aneurysms).[10]

Non-Indications

➔ **Duplex Ultrasound** is not considered appropriate if **ANY** of the following is **TRUE**:

- ◆ The patient is not a candidate for intervention (e.g., due to advanced age or medical comorbidities).

Site of Service Criteria

Outpatient

Procedure Codes (HCPCS/CPT)

HCPCS Code	Code Description/Definition
76706	Ultrasound, abdominal aorta, real time with image documentation, screening study for abdominal aortic aneurysm (AAA)
93880	Aorta, inferior vena cava, iliac vasculature, or bypass grafts; complete study
93979	Aorta, inferior vena cava, iliac vasculature, or bypass grafts; unilateral or limited study

Service: Computed Tomography (CT), Abdomen and Pelvis (Abdominal Aortic Aneurysm)

General Guidelines

- **Units, Frequency, & Duration:** Once.
- **Criteria for Subsequent Requests:** Repeat scanning may be appropriate based on the patient's initial aortic diameter (see diameter criteria outlined below)
- **Recommended Clinical Approach:** For aortic aneurysms, IV contrast may be unnecessary. IV contrast is recommended for the diagnosis of aortic dissections.[11]-[12]
- **Exclusion criteria:** None.

Medical Necessity Criteria

Indications

➔ **CT, Abdomen and Pelvis** is considered appropriate if **ALL** of the following are **TRUE**[11]:

- Duplex ultrasound fails to adequately assess the abdominal aorta and iliac arteries.
- Duplex ultrasound is not expected to provide adequate information based on a patient's clinical characteristics (e.g., morbid obesity).

Non-Indications

➔ **CT, Abdomen and Pelvis** is not considered appropriate if **ANY** of the following is **TRUE**[11]:

- Duplex ultrasound was not attempted or performed
- No clinical factors suggest that duplex imaging would be inadequate.

➔ **CT, Abdomen and Pelvis** may not be appropriate if **ANY** of the following is **TRUE**[13]:

◆ The patient is being considered for a contrast CT, and **ANY** of the following is true:

- The patient takes metformin.
- The patient has IV contrast dye hypersensitivity.
- The patient has impaired renal function and angiographic IV contrast is utilized for the study.
- The patient is pregnant.

Site of Service Criteria:

Outpatient

Procedure Codes (HCPCS/CPT)

HCPCS Code	Code Description/Definition
71250	Computed tomography (CT) of thorax without contrast material
71260	Computed tomography (CT) of thorax with contrast material
71270	Computed tomography (CT) of thorax without contrast material, followed by contrast and further sections
76380	Limited follow-up computed tomography (CT)
74174	Computed tomographic angiography (CTA) of abdomen and pelvis with contrast material and image postprocessing
74175	Computed tomographic angiography (CTA) of abdomen with contrast material and image postprocessing
74176	Computed tomography (CT) of abdomen and pelvis without contrast material
74177	Computed tomography (CT) of abdomen and pelvis with contrast material
74178	Computed tomography (CT) of abdomen and pelvis, without contrast material, followed by contrast material and further sections of abdomen

Service: Duplex Ultrasound, Aorta and Iliofemoral Arteries (Aortoiliac Occlusive Disease)

General Guidelines

- **Units, Frequency, & Duration:** Once.
- **Criteria for Subsequent Requests** Follow-up imaging is appropriate for patients with known aortoiliac arterial occlusive disease to detect disease progression or to assess the response to medical or interventional therapies.
- **Recommended Clinical Approach:** Patients who present with symptoms and signs of lower extremity arterial occlusive disease including claudication, impotence (males), rest pain or other signs of limb-threatening ischemia. The addition of ankle brachial index would be appropriate under the clinical indications for a duplex ultrasound.[10]
- **Exclusions:** None.

Medical Necessity Criteria

Indications

➔ **Duplex Ultrasound** is considered appropriate if **ANY** of the following is **TRUE**[10]:

- The patient has **ANY** of the following signs or symptoms of aortoiliac arterial occlusive disease:
  - Buttock or lower extremity claudication
  - Impotence (males)
  - Rest pain or other signs of limb-threatening ischemia
  - Reduced or absent lower extremity pulses
- Follow-up of prior diagnosis of aortoiliac arterial occlusive disease

Non-Indications

None.

Site of Service Criteria

Outpatient

Procedure Codes (HCPCS/CPT)

HCPCS Code	Code Description/Definition
76706	Ultrasound, abdominal aorta, real time with image documentation, screening study for abdominal aortic aneurysm (AAA)

93880	Aorta, inferior vena cava, iliac vasculature, or bypass grafts; complete study
93979	Aorta, inferior vena cava, iliac vasculature, or bypass grafts; unilateral or limited study
93923	ABI study, bilateral

Service: Computed Tomography Angiogram (CTA), Aorta and Iliofemoral Arteries with run-off (Aortoiliac Occlusive Disease)

General Guidelines

- **Units, Frequency, & Duration:** Patients who present with symptoms and signs of lower extremity arterial occlusive disease including claudication, impotence (males), rest pain, or other signs of limb-threatening ischemia in whom duplex scanning is inadequate to image the affected arteries.[14]
- **Criteria for Subsequent Requests:** Follow-up of patients with a known aortoiliac arterial occlusive disease to plan intervention, detect progression of the disease or to assess the patient's response to medical or interventional therapies
- **Recommended Clinical Approach:** As above
- **Exclusion criteria:** see CTA contraindications

Medical Necessity Criteria

Indications

➔ ***CTA, aorta and iliofemoral arteries with run-off*** is considered appropriate if **ALL** of the following are **TRUE**[2,14]:

- Duplex ultrasound fails to adequately assess the abdominal aorta or iliac arteries
- Duplex ultrasound is not expected to provide adequate information based on patient characteristics (e.g., morbid obesity)
- The clinician requires detailed images of the arterial anatomy for diagnosis or treatment.

Non-Indications

➔ **CTA, aorta, and iliofemoral arteries with run-off** is not considered appropriate if **ALL** of the following are **TRUE**[2]:

- A duplex ultrasound has either not been attempted or performed (and there are no clinical factors suggesting that duplex scanning would be inadequate to visualize the abdominal aorta and iliac arteries)
- The patient is not a candidate for intervention (e.g., due to advanced age or medical comorbidities).

Site of Service Criteria:

Outpatient.

Procedure Codes (HCPCS/CPT)

HCPCS Code	Code Description/Definition
74160	Computed tomography (CT) of abdomen with IV contrast material including the pelvis and run off

Service: Computed Tomography (CT), Chest (Thoracic and Thoracoabdominal Aortic Aneurysms)

General Guidelines

- **Units, Frequency, & Duration:** Once.
- **Criteria for Subsequent Requests:** Repeat scanning may be appropriate based on the patient's initial diagnosis, and follow-up of potential disease progression
- **Recommended Clinical Approach:** Surveillance for aneurysmal degeneration of the thoracic or thoracoabdominal aorta based on the patient's aortic diameter [10]
- **Exclusion criteria:** None.

Medical Necessity Criteria

Indications

➔ **CT of the Chest** is considered appropriate if **ANY** of the following is **TRUE**[10,15]:

- The patient requires a chest CT for **ANY** of the following:
  - An X-ray (or other imaging study) suggests the presence of a thoracic or thoracoabdominal aortic aneurysm
  - Patients with underlying conditions which put them at increased risk of aneurysmal degeneration of the thoracic or thoracoabdominal aorta (e.g., Marfan's syndrome, Ehler Danlos syndrome, Turner's syndrome)
  - Patient with signs or symptoms suggesting the presence of a thoracic or thoracoabdominal aortic aneurysm
- The patient requires a follow-up chest CT for **ANY** of the following:
  - Degenerative aortic root or ascending aortic aneurysm and **ANY** of the following:
    - Aortic diameter 3.5 to 4.4 cm: Annual CT or MRA; echocardiogram to follow valvular disease (if needed)
    - Aortic diameter 4.5 to 5.4 cm: Biannual (every six months) CT or MRA; echocardiogram to follow valvular disease (if needed)
  - Genetically mediated aortic root or ascending aortic aneurysm and **ANY** of the following:
    - Aortic diameter 3.5 to 4.4 cm: Annual echocardiogram, CT, or MRI

        - Aortic diameter 4.5 to 5.0 cm: Biannual (every six months) echocardiogram, CT or MRI
    - Descending aortic aneurysm and **ANY** of the following:
        - Aortic diameter 4.0 to 4.9 cm: Annual CT or MRA
        - Aortic diameter 5.0 to 6.0 cm: Biannual (every six months) CT or MRA
    - The patient has had a previous intervention (e.g., open repair, EVAR and/or TEVAR)
- A patient with a known aortic dissection that requires ongoing follow-up to detect aneurysmal degeneration of the dissected aortic segment.

Non-Indications

➔ **CT of the Chest** may not be considered appropriate if **ANY** of the following is **TRUE**:

- The patient is not a candidate for intervention (e.g., due to advanced age or medical comorbidities).
- Imaging studies did not provide evidence of aortic pathology.
- The patient is pregnant.
- The patient is being considered for a contrast CT for an aortic aneurysm, and **ANY** of the following is true:
    - The patient takes metformin.
    - The patient has IV contrast dye hypersensitivity.
    - The patient has impaired renal function, and angiographic IV contrast is utilized for the study.[13]

Site of Service Criteria:

Outpatient

Procedure Codes (HCPCS/CPT)

HCPCS Code	Code Description/Definition
71250	Computed tomography (CT) of thorax without iodinated contrast material
71260	Computed tomography (CT) of thorax with iodinated contrast material
74176	Computed tomography (CT) of abdomen and pelvis without contrast material
74177	Computed tomography (CT) of abdomen and pelvis with contrast material

Service: Magnetic Resonance Angiogram (MRA), Chest (Thoracic and Thoracoabdominal Aortic Aneurysms)

General Guidelines

- **Units, Frequency, & Duration:** Once.
- **Criteria for Subsequent Requests:** Repeat scanning may be appropriate based on the patient's initial diagnosis or to detect disease progression.
- **Recommended Clinical Approach:**
  - Initial imaging to detect aneurysmal degeneration of the thoracic or thoracoabdominal aorta (or dissection)
  - Follow-up imaging (based on documented aortic anatomy/pathology)[10,15]
- **Exclusion criteria:** Exclusions include contraindications of MRI (e.g., retained metal, incompatible width to bore size, claustrophobia), incompatibility with following directions (i.e., breath-hold), and renal insufficiency (eGFR less than 30 mL/min) if gadolinium is requested.

Medical Necessity Criteria

Indications

➔ **MRA** is considered appropriate if **ANY** of the following is **TRUE**[10,15]:

- Initial MRA for **ANY** of the following:
  - An X-ray (or another imaging study) suggests thoracic aortic pathology.
  - Patients with underlying conditions who are at increased risk of aneurysmal degeneration of the aorta (e.g., Marfan syndrome, Ehlers-Danlos syndrome, Turner syndrome)
- Follow-up MRA for **ANY** of the following:
  - Degenerative aortic root or ascending aortic aneurysm and **ANY** of the following:
    - Aortic diameter 3.5 to 4.4 cm: Annual CT or MRA; echocardiogram to follow valvular disease (if needed)
    - Aortic diameter 4.5 to 5.4 cm: Biannual (every six months) CT or MRA; echocardiogram to follow valvular disease (if needed)
  - Genetically mediated aortic root or ascending aortic aneurysm and **ANY** of the following:
    - Aortic diameter 3.5 to 4.4 cm: Annual echocardiogram, CT, or MRI

        - Aortic diameter 4.5 to 5.0 cm: Biannual imaging (every six months) with an echocardiogram, CT, or MRI
    - Descending aortic aneurysm and **ANY** of the following:
        - Aortic diameter 4.0 to 4.9 cm: Annual CT or MRA
        - Aortic diameter 5.0 to 6.0 cm: Biannual (every six months) CTA or MRA.

Non-Indications

➔ **MRA** is not considered appropriate if **ANY** of the following is **TRUE**[16-17]:

- The patient is not a candidate for intervention (e.g., due to advanced age or medical comorbidities).
- The patient has non-compatible implanted devices.
- The patient has metallic intraocular foreign bodies.

➔ **MRA** may not be appropriate if **ANY** of the following is **TRUE**[16-17]:

- The patient is severely claustrophobic.
- There is a potential for adverse reactions to IV contrast media.
- The patient is physically unable to stay in a recumbent position for the duration of the study.
- If the patient has renal insufficiency (eGFR less than 30 mL/min per 1.73 m^2) and if gadolinium contrast is requested, an MRI or MRA may not be appropriate.
- The patient is pregnant (avoid MRA if possible in the first trimester if gadolinium use is planned).[13]

Site of Service Criteria:

Outpatient

Procedure Codes (HCPCS/CPT)

HCPCS Code	Code Description/Definition
71555	Magnetic resonance angiography (MRA) of chest with contrast material
C8909	MRA w/cont, chest
C8911	MRA w/o fol w/cont, chest
C8910	MRA w/o cont, chest

***Service*: Computed Tomography Angiography (CTA), Chest with or without abdomen and pelvis and branch vessels (Aortic Dissection)**

General Guidelines

- **Units, Frequency, & Duration:** Once.
- **Criteria for Subsequent Requests:** Initial imaging for diagnosis. Follow-up imaging to detect dissection progression or resolution. In addition, follow-up imaging is appropriate at regular intervals to detect aneurysmal degeneration of the affected aortic segments.
- **Recommended Clinical Approach:** Diagnosis or follow-up of aortic dissection.[15,18]
- **Exclusion criteria:** None.

Medical Necessity Criteria

Indications

➔ **CTA, chest** is considered appropriate if **ANY** of the following is **TRUE**[15,18]:
- ◆ The patient's clinical presentation suggests the presence of an aortic dissection
- ◆ An X-ray (or another imaging study) suggests the presence of aortic dissection
- ◆ Known history of aortic dissection
- ◆ Symptoms or signs suggesting dissection progression or aneurysmal degeneration of the affected aortic segments (NOTE: A CT scan without IV contrast may be used to diagnose and follow aortic aneurysm disease in the absence of aortic dissection)

Non-Indications

➔ **CTA, chest** may not be considered inappropriate if **ANY** of the following is **TRUE**:
- ◆ The patient is not a candidate for intervention (e.g., due to advanced age or medical comorbidities)
- ◆ The patient takes metformin (the clinician is recommended to follow current clinical guidelines for cessation/resumption of metformin in patients who are receiving metformin **AND** who require CT scanning with IV contrast)
- ◆ The patient has IV contrast dye hypersensitivity
- ◆ The patient has impaired renal function and angiographic contrast is utilized for the study
- ◆ The patient is pregnant[13]

Site of Service Criteria:

Inpatient or outpatient

Procedure Codes (HCPCS/CPT)

HCPCS Code	Code Description/Definition
75635	Computed tomographic angiography, abdominal aorta and bilateral iliofemoral lower extremity runoff, with contrast material(s), including noncontrast images, if performed, and image postprocessing.
71250	Computed tomography (CT) of thorax without iodinated contrast material
71260	Computed tomography (CT) of thorax with iodinated contrast material
71270	Computed tomography (CT) of thorax without contrast material, followed by contrast and further sections
76380	Limited follow-up computed tomography (CT)
74150	Computed tomography (CT) of abdomen without contrast material
74160	Computed tomography (CT) of abdomen with contrast material
74176	Computed tomography (CT) of abdomen and pelvis without contrast material
74177	Computed tomography (CT) of abdomen and pelvis with contrast material
74170	Computed tomography (CT) of abdomen without contrast material, followed by contrast material and further sections
72192	Computed tomography (CT) of pelvis without contrast material
72193	Computed tomography (CT) of pelvis with contrast material
72194	Computed tomography (CT) of pelvis without contrast material, followed by contrast material and further sections

***Service*: Magnetic Resonance Angiography (MRA), Chest with or without abdomen and pelvis and branch vessels (Aortic Dissection)**

General Guidelines

- **Units, Frequency, & Duration:** Diagnosis or follow-up of aortic dissection
- **Criteria for Subsequent Requests:** Follow-up imaging of aortic dissections is indicated to detect dissection progression or resolution. In addition, follow-up imaging is appropriate at regular intervals to detect aneurysmal degeneration of the affected aortic segments.
- **Recommended Clinical Approach:** Diagnosis or follow-up of aortic dissection.[10,15]
- **Exclusion criteria:** Exclusions include contraindications of MRI (e.g., retained metal, incompatible width to bore size, claustrophobia), incompatibility with following directions (i.e., breath-hold), and renal insufficiency (eGFR less than 30 mL/min) if gadolinium is requested.

Medical Necessity Criteria

Indications

➔ **MRA** is considered appropriate if **ANY** of the following is **TRUE**[10,15]:
- The patient's clinical presentation suggests the presence of an aortic dissection
- An X-ray (or another imaging study) suggests the presence of aortic dissection
- Known history of aortic dissection
- Symptoms or signs suggest dissection progression or aneurysmal degeneration of the affected aortic segments

Non-Indications

➔ **MRA** is not considered appropriate if **ANY** of the following is **TRUE**[16-17]:
- ◆ The patient is not a candidate for intervention (e.g., due to advanced age or medical comorbidities)
- ◆ The patient has non-compatible implanted devices
- ◆ The patient has metallic intraocular foreign bodies

➔ **MRA** may not be appropriate if **ANY** of the following is **TRUE**[16-17]:
- ◆ The patient is severely claustrophobic
- ◆ There is a potential for adverse reactions to IV contrast media
- ◆ The patient is physically unable to stay in a recumbent position for the duration of the study

- The patient has renal insufficiency (eGFR less than 30 mL/min per 1.73 m^2) and if gadolinium IV contrast is requested, an MRI or MRA may not be appropriate
- The patient is pregnant (avoid MRA if possible in the first trimester if gadolinium use is planned)

Site of Service Criteria:

Outpatient

HCPCS Code	Code Description/Definition
71555	Magnetic resonance angiography (MRA) of chest with contrast material
C8909	MRA w/cont, chest
C8911	MRA w/o fol w/cont, chest
C8910	MRA w/o cont, chest

Surgical or Interventional Management

Service: Open Surgical Repair (Aortic Aneurysms)

General Guidelines

- **Units, Frequency, & Duration:** Once.
- **Criteria for Subsequent Requests:** None.
- **Recommended Clinical Approach:** The treating cardiothoracic or vascular surgeon is in the best position to choose the most appropriate treatment for the patient based on anatomic and clinical factors (i.e., endovascular, open surgical, or hybrid repair).
- **General treatment guidelines for open repair include the following:**
    - All symptomatic aortic aneurysms
    - Asymptomatic abdominal aortic aneurysms greater than 5.5 cm in males (greater than 5 cm in females) and saccular aneurysms in good-risk patients with a reasonable life expectancy[19]
    - Asymptomatic ascending thoracic or thoracoabdominal aneurysms with an aortic diameter greater than 5.5 cm with a reasonable life expectancy
    - Asymptomatic ascending thoracic or thoracoabdominal aneurysms in patients with genetically mediated aortic diseases or bicuspid aortic valve may be appropriate for repair at a aortic diameter less than 5.5 cm
    - Asymptomatic descending thoracic or thoracoabdominal aneurysms:
        - Good-risk patients with an aortic diameter greater than 5.5 cm
        - High-risk surgical patients with an aortic diameter greater than 6 cm[19]
        - Patients with genetically mediated aortic diseases or a bicuspid aortic valve may be appropriate for repair at an aortic diameter less than 5.4 cm[10,20]

- **Exclusions:** Patients at high or prohibitive surgical risk or with limited life expectancy.

Medical Necessity Criteria

Indications

➔ **Open aortic aneurysm repair** is considered appropriate if **ANY** of the following is **TRUE**[10,20]:

- Abdominal aortic aneurysm diameter greater than 5.5 cm (males) or greater than 5 cm (females) in good-risk patients
- Abdominal aortic aneurysm diameter less than 5.5 cm (males) or less than 5 cm (females) with a saccular component or with documented rapid expansion
- Thoracic aortic aneurysm diameter greater than 5.5 cm in good-risk patients
- Thoracoabdominal aortic aneurysm diameter greater than 5.5 cm in good-risk patients
- Preoperative risk assessment indicates acceptable surgical risk

Non-Indications

➔ **Open aortic aneurysm repair** is considered inappropriate if **ANY** of the following is **TRUE**[10,20]:

- Aortic aneurysm size less than 3 cm
- Limited life expectancy
- Prohibitive surgical risk

Site of Service Criteria

Inpatient

HCPCS Code	Code Description/Definition
35081	Open surgical repair, AAA with tube graft
35102	Open surgical repair, AAA with iliac involvement
35091	Open surgical repair, AAA with visceral involvement
34830	Open surgical repair, AAA tube graft after unsuccessful endovascular repair
34831	Open surgical repair, AAA with iliac involvement after unsuccessful endovascular repair
34832	Open surgical repair, AAA with aortofemoral bypass after unsuccessful endovascular repair
33875	Open surgical repair, thoracic aortic aneurysm
33877	Open surgical repair, thoracoabdominal aortic aneurysm

Service: Endovascular/Hybrid Repair (Aortic Aneurysms)

General Guidelines

- **Units, Frequency, & Duration:** Once.
- **Criteria for Subsequent Requests:** Endovascular aneurysm repairs that develop complications (e.g., endograft migration or endoleaks) in the postoperative surveillance phase may be candidates for re-intervention.
- **Recommended Clinical Approach:** The treating cardiothoracic or vascular surgeon is in the best position to choose the most appropriate treatment (open, endovascular, or hybrid) for the patient based on anatomic and clinical factors. Generally speaking, endovascular approaches can be done percutaneously. There are certain clinical circumstances where surgical intervention is necessary to facilitate an endovascular approach.
- General treatment guidelines for endovascular/hybrid repair include the following:
    - All symptomatic aortic aneurysms (in patients that are deemed by the treating clinician to be appropriate candidates for intervention)
    - Asymptomatic abdominal aortic aneurysms greater than 5.5 cm in males (greater than 5 cm in females) and saccular aneurysms in good-risk patients with a reasonable life expectancy[19]
    - Asymptomatic ascending thoracic or thoracoabdominal aneurysms with an aortic diameter greater than 5.5 cm and acceptable surgical risk
    - Asymptomatic ascending thoracic or thoracoabdominal aneurysms in patients with genetically mediated aortic diseases or bicuspid aortic valve may be appropriate for repair at an aortic diameter less than 5.5 cm
    - Asymptomatic descending thoracic or thoracoabdominal aneurysms:
        - Good-risk patients with an aortic diameter greater than 5.5 cm
        - High-risk surgical patients with an aortic diameter greater than 6 cm[19]
        - Patients with genetically mediated aortic diseases or bicuspid aortic valves may be appropriate for repair at an aortic diameter less than 5.5 cm.[10,20]
- **Exclusions:**
    - Aortic aneurysm size less than 3 cm
    - Limited life expectancy
    - Prohibitive surgical risk

Medical Necessity Criteria

Indications

- ➔ **Endovascular aortic aneurysm repair** is considered appropriate if **ANY** of the following is **TRUE**[10,20]:
  - ◆ If the patient has preoperative risk assessment that indicates acceptable surgical risk and **ANY** of the following:
    - Abdominal aortic aneurysm diameter greater than 5.5 cm (males) or greater than 5 cm (females)
    - Abdominal aortic aneurysm diameter less than 5.5 cm (males) or less than 5 cm (females) with a saccular component or with documented rapid expansion
    - Thoracic aortic aneurysm diameter greater than 5.5 cm
    - Thoracoabdominal aortic aneurysm diameter greater than 5.5 cm

Non-Indications

- ➔ **Endovascular aortic aneurysm repair** is considered inappropriate if **ANY** of the following is **TRUE**[10,20]:
  - ◆ Aortic aneurysm size less than 3 cm
  - ◆ Limited life expectancy
  - ◆ Prohibitive surgical risk

Site of Service Criteria

Inpatient or outpatient

Procedure Codes (HCPCS/CPT)

HCPCS Code	Code Description/Definition
34701	Endovascular repair of nonruptured aneurysm of infrarenal aorta using aorta aortic tube endograft, with radiological supervision and interpretation
34702	Endovascular repair of ruptured aneurysm of infrarenal aorta using aorto-aortic tube endograft, with radiological supervision and interpretation
34703	Endovascular repair of nonruptured aneurysm of iliac artery using aortouni-iliac endograft, with radiological supervision and interpretation
34704	Endovascular repair of ruptured aneurysm of iliac artery using aortouni-iliac endograft, with radiological supervision

	and interpretation
34705	Endovascular repair of nonruptured aneurysm of iliac artery using aortobi-iliac endograft, with radiological supervision and interpretation
34706	Endovascular repair of rupture of iliac artery using aortobi-iliac endograft, with radiological supervision and interpretation
33880	Endovascular repair of aneurysm of descending thoracic aorta with initial endoprosthesis, with coverage of left subclavian artery origin
33881	Endovascular repair of aneurysm of descending thoracic aorta
33883	Placement of proximal extension prosthesis for endovascular repair of descending thoracic aorta
33886	Delayed placement of distal extension prosthesis after endovascular repair of descending thoracic aorta
34841	Endovascular repair of visceral aorta using fenestrated visceral aortic endograft and single visceral artery endoprosthesis
34842	Endovascular repair of visceral aorta using fenestrated visceral aortic endograft and 2 visceral artery endoprostheses
34843	Endovascular repair of visceral aorta using fenestrated visceral aortic endograft and 3 visceral artery endoprostheses
34845	Endovascular repair of visceral aorta and infrarenal abdominal aorta using fenestrated visceral aortic endograft, modular infrarenal aortic endograft, and single visceral artery endoprostheses
34846	Endovascular repair of visceral aorta and infrarenal abdominal aorta using fenestrated visceral aortic endograft, modular infrarenal aortic endograft, and 2 visceral artery endoprostheses
34847	Endovascular repair of visceral aorta and infrarenal abdominal aorta using fenestrated visceral aortic

	endograft, modular infrarenal aortic endograft, and 3 visceral artery endoprostheses
34848	Endovascular repair of visceral aorta and infrarenal abdominal aorta using fenestrated visceral aortic endograft, modular infrarenal aortic endograft, and 4 or more visceral artery endoprostheses
34844*	Endovascular repair of visceral aorta using fenestrated visceral aortic endograft and 4 or more visceral artery endoprostheses
34845	Endovascular repair of visceral aorta and infrarenal abdominal aorta using fenestrated visceral aortic endograft, modular infrarenal aortic endograft, and single visceral artery endoprostheses

Service: Open Surgical Repair/Endovascular Repair/Hybrid Repair (Aortoiliac Occlusive Disease)

General Guidelines

- **Units, Frequency, & Duration:** Open surgical revascularization, endovascular intervention, and hybrid intervention are appropriate in patients with symptomatic aortoiliac occlusive disease who have lifestyle-limiting claudication or critical limb ischemia.
- **Criteria for Subsequent Requests:** None.
- **Recommended Clinical Approach:** The treating cardiothoracic or vascular surgeon is in the best position to choose the most appropriate treatment (open, endovascular, or hybrid) for the patient based on anatomic and clinical factors. [19]
- **Exclusions:** Patients at high or prohibitive surgical risk or with a limited life expectancy.[19]

Medical Necessity Criteria

Indications

➔ **Open, endovascular, and hybrid revascularization** are considered appropriate if **ALL** of the following are **TRUE**:
- ◆ Documentation of lifestyle-limiting claudication or critical limb ischemia which has not responded to medical management or prior interventional treatments
- ◆ Preoperative risk assessment indicates acceptable surgical risk[19]

Non-Indications

➔ **Open, endovascular, and hybrid revascularization** are not considered inappropriate if **ANY** of the following is **TRUE**[19]:
- ◆ Limited life expectancy
- ◆ Prohibitive surgical risk

Site of Service Criteria

Inpatient

HCPCS Code	Code Description/Definition
35646	Aortobifemoral bypass
35638	Aortobiiliac bypass
35647	Aortounifemoral bypass

35654	Axillobifemoral bypass
35621	Axillofemoral bypass
35661	Femoral femoral bypass
35665	Iliofemoral bypass
37224	Angioplasty, femoral
37220	Angioplasty, iliac
37222	Angioplasty, iliac additional vessel(s)
37221	Stent with PTA, iliac
37223	Stent with PTA, iliac additional vessel(s)
0238T	Atherectomy, iliac (suprainguinal arteries)

Surgical Risk Factors

Patient Medical Risk Stratification

Patient Risk Score	Patient Characteristic	Min Range	Max Range	Guidance
1- Very Low Risk	No known medical problems			
2- Low Risk	Hypertension		180/110 mm Hg	
2- Low Risk	Asthma	peak flow >80% of predicted or personal best value		
2- Low Risk	Prior history of alcohol abuse			Screen for liver disease and malnutrition
2- Low Risk	Prior history of tobacco use			
3- Intermediate Risk	Asthma	peak flow <80% of predicted or personal best value		
3- Intermediate Risk	Active alcohol abuse			
3- Intermediate Risk	Age	65	75	
3- Intermediate Risk	History of treated, stable coronary artery disease (CAD)			
3- Intermediate Risk	Stable atrial fibrillation			
3- Intermediate Risk	Diabetes mellitus	HbA1C >7%		
3- Intermediate Risk	Morbid obesity	BMI 30	BMI 40	
3- Intermediate Risk	Anemia	hemoglobin <11 (females), <12 (males)		Workup to identify etiology
3- Intermediate Risk	HIV	CD4 <200 cells/mm3		Get clearance from HIV specialist
3- Intermediate Risk	Rheumatologic disease			Preoperative consultation with rheumatologist re: perioperative medication management
3- Intermediate Risk	Peripheral vascular disease or history of peripheral vascular bypass	ankle-brachial pressure index (ABPI)		Preoperative consultation with vascular surgeon

		<0.9		
3- Intermediate Risk	History of venous thromboembolism (VTE)			
3- Intermediate Risk	Well-controlled obstructive sleep apnea			
3- Intermediate Risk	Malnutrition	transferrin <200 mg/dL albumin <3.5 g/dL prealbumin <22.5 mg/dL total lymphocyte count <1200-1500 cell/mm3 BMI <18		Preoperative consultation with nutritionist
3- Intermediate Risk	Active tobacco Use			Enroll patient in smoking cessation program
3- Intermediate Risk	Known allergy or hypersensitivity to medication needed for procedure			
4- High Risk	Advanced Renal Disease (Creatinine > 2)			
4- High Risk	Diabetes mellitus with complications	HbA1c >8%		
4- High Risk	Age	76	85	
4- High Risk	Oxygen dependent pulmonary disease			
4- High Risk	Sickle cell anemia			
4- High Risk	Obesity	BMI 40		
4- High Risk	Cirrhosis, history of hepatic decompensation or variceal bleeding			
4- High Risk	Impaired cognition; dementia			
4- High Risk	Compensated CHF			
4- High Risk	Cerebrovascular disease			
4- High Risk	Uncontrolled or suspected obstructive sleep apnea (OSA)			
4- High Risk	Renal insufficiency	serum creatinine >1.5 mg/dL or creatinine clearance <100 mL/min		

4- High Risk	Opioid dependence			
5- Very High Risk	Percutaneous Coronary Intervention (PCI) within 1 month			
5- Very High Risk	Cardiovascular: unstable angina, recent myocardial infarction (60 days), uncontrolled atrial fibrillation or other high-grade abnormal rhythm, severe valvular disease, decompensated heart failure			
5- Very High Risk	Primary pulmonary hypertension			Preoperative consultation with pulmonologist warranted
5- Very High Risk	Cirrhosis or severe liver disease, history of hepatic decompensation or variceal bleeding			
5- Very High Risk	Severe frailty, dependence for ADLs, or history of 3 or more falls in last 6 mos			
5- Very High Risk	Obesity		BMI >50	
5- Very High Risk	Age		>85	
5- Very High Risk	History of VTE with CI to anticoagulation, failure of anticoagulation, cessation of anticoagulation therapy secondary to bleeding			Preoperative consultation with hematologist or internist
5- Very High Risk	Renal failure requiring dialysis			
5- Very High Risk	Immunosuppression			
5- Very High Risk	Chronic Pain			

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Radiology, American Institute of Ultrasound in Medicine, American Society of Echocardiography, American Society of Nephrology, Intersocietal Commission for the Accreditation of Vascular Laboratories, Society for Cardiovascular Angiography and Interventions, Society of Cardiovascular Computed Tomography, Society for Interventional Radiology, Society for Vascular Medicine, Society for Vascular Surgery, [corrected] and Society for Vascular Ultrasound. [corrected] [published correction appears in J Am Coll Cardiol. 2013 Oct 15;62(16):1540]. J Am Coll Cardiol. 2012;60(3):242-276. doi:10.1016/j.jacc.2012.02.009
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Clinical Guideline Revision History/Information

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