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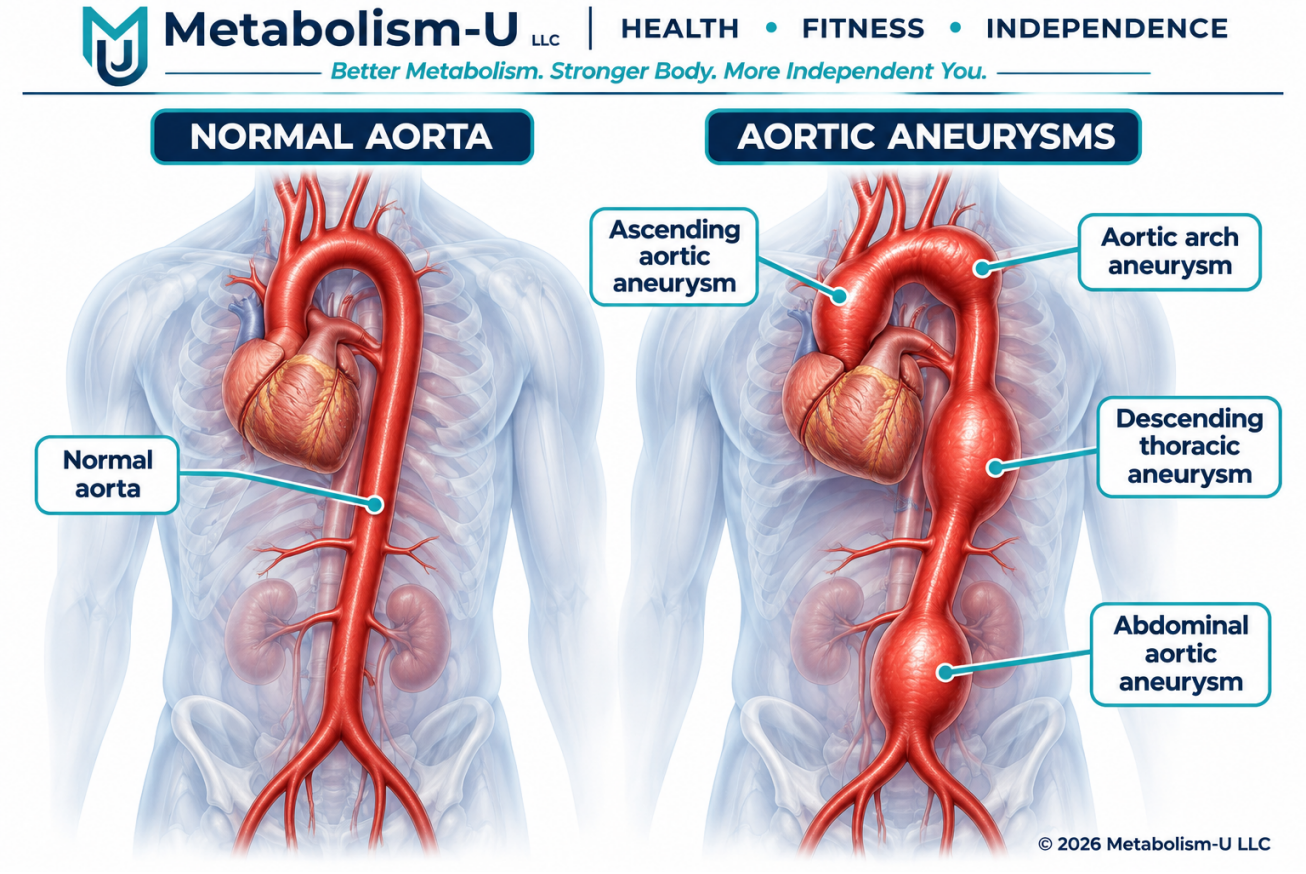
BP-041 | AORTIC ANEURYSMS: THE SILENT KILLER

What adults over 50 should know about detection, screening, surveillance, and prevention

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The central message

An aortic aneurysm is a localized enlargement of the body's main artery. It can grow silently for years. Most do not rupture, especially when small and monitored, but rupture or aortic dissection can cause catastrophic internal bleeding or loss of blood flow. Timely recognition, appropriately targeted screening, and a lifelong follow-up plan can save lives. "Silent killer" is a warning—not a prediction that every aneurysm will rupture.



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Figure 1. Normal aorta compared with illustrated aneurysmal enlargement at four anatomical sites. Schematic: not to scale.

What is an aneurysm—and where can one occur?

An aneurysm is abnormal enlargement of an arterial segment, often described as at least 50% greater than its expected normal diameter; the threshold depends on the vessel and body size. The aorta runs from the heart through the chest and abdomen. Aneurysms can also develop in brain arteries and in arteries elsewhere, but this Blueprint concentrates on the aorta. Aortic dissection—a tear within the aortic wall—is a different but related emergency and may occur with or without a previously recognized aneurysm.

How common—and how deadly?

Abdominal aortic aneurysm (AAA) is substantially more common in men than women. Prevalence depends strongly on age, tobacco exposure, country, and the screening era. Older screening trials reported AAA in approximately 4–8% of older men and around 1–2% of older women; contemporary screened populations often have lower rates. These figures should not be interpreted as a universal prevalence estimate. In adults aged 65–80, AAA has been estimated to be roughly four to six times as prevalent in men as in women. [3, 6, 7]

The danger is rupture. Many patients die before reaching a hospital, and the overall fatality of ruptured AAA has been reported as high as approximately 80–81% when prehospital deaths are included. This is NOT the mortality of an unruptured, monitored aneurysm. Women with AAA may rupture at smaller diameters and have worse outcomes after emergency or elective repair. Screening studies in men have demonstrated reductions in AAA-related mortality. [3, 6, 7]

Thoracic aortic aneurysms are less readily summarized by a single population prevalence figure because ascertainment varies and many are found incidentally. Aortic dissection is a distinct acute emergency that can occur with or without a previously recognized aneurysm. [1]

How common is it? Who is at risk?

Abdominal aortic aneurysms (AAA) are more common than thoracic aortic aneurysms. Prevalence varies widely with age, smoking history, sex, and screening population; modern studies find AAA in roughly 1%–2% of screened older men in many populations, with higher rates in people who smoke. Thoracic aneurysms are less common and harder to quantify because many are found incidentally; reported thoracic aneurysm incidence is approximately 5–10 per 100,000 person-years in some populations. Neither figure represents an individual's lifetime risk. [1–4]

- Age: risk rises with age, particularly after 65 for AAA; inherited thoracic disease may appear much earlier.
- Smoking: especially strongly associated with AAA development, growth, and rupture.
- Hypertension: increases aortic wall stress and is especially important in thoracic aortic disease.
- Family history and genetics: first-degree relatives, Marfan syndrome, Loeys–Dietz syndrome, vascular Ehlers–Danlos syndrome, and other inherited conditions.
- Bicuspid aortic valve, aortic coarctation, inflammatory or infectious disease, and previous aortic disease.
- Male sex and atherosclerotic vascular disease are particularly associated with AAA; risk patterns differ by aortic segment.

Obesity, inactivity, and unfavorable lipids matter to overall cardiovascular health, but the causes of ascending thoracic aneurysms differ from those of abdominal aneurysms; not all aneurysms are caused by cholesterol plaque. [1,2]

The four aortic locations—and why location matters

1 | Ascending aorta and aortic root

The segment leaving the heart, including the aortic root near the aortic valve. Enlargement may be associated with inherited wall disorders, a bicuspid aortic valve, aging, and hypertension. Echocardiography often evaluates the root and proximal ascending aorta, but CT or MRI may be needed to establish complete dimensions. Potential complications include dissection, rupture, and aortic valve leakage. [1,2]

2 | Aortic arch

The curved portion supplying the head and arms. Arch aneurysms may accompany ascending or descending disease. CT angiography or MR angiography usually defines their extent better than routine transthoracic echo. Repair is technically complex because major branches supply the brain. [1,2]

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3 | Descending thoracic aorta

The chest segment after the arch. Degenerative changes, hypertension, smoking, and atherosclerosis are frequent associations. It is not reliably assessed in full by standard echocardiography. CT or MRI is typically used for diagnosis and follow-up; selected aneurysms can be treated with thoracic endovascular stent grafting (TEVAR). [1,2]

4 | Abdominal aorta

The segment below the diaphragm, most commonly below the kidney arteries. AAA is often related to smoking, age, male sex, and family history. Ultrasound is the preferred screening and routine surveillance test. Repair may be open surgery or endovascular aneurysm repair (EVAR), depending on anatomy and patient factors. [1–3]

Thoracic aortic aneurysms: symptoms before rupture

Most thoracic aortic aneurysms cause no symptoms. An enlarging aneurysm may cause persistent or intermittent chest discomfort, upper-back pain (including pain between the shoulder blades), or discomfort in the neck or jaw. Depending on its location, pressure on adjacent structures can cause hoarseness, difficulty swallowing, cough, wheezing, or shortness of breath. These symptoms are not specific to aneurysms and require clinical assessment. [1,9]

Thoracic aortic dissection or rupture: emergency symptoms

An acute aortic dissection is a tear in the inner aortic wall; rupture is bleeding through the outer wall. They are distinct emergencies, and dissection can occur even without a previously recognized aneurysm. Sudden, severe chest or upper-back pain—sometimes described as tearing or ripping—may occur, with pain extending to the neck, jaw, abdomen, or back. Fainting, collapse, shortness of breath, stroke-like symptoms, or signs of shock may also occur. Not everyone has classic pain. CALL EMERGENCY SERVICES IMMEDIATELY; do not drive yourself or wait for symptoms to resolve. [1,9]

Abdominal aortic aneurysms: symptoms before rupture

Most abdominal aortic aneurysms are asymptomatic. An enlarging aneurysm may cause persistent or unexplained deep abdominal, flank, or lower-back pain, and sometimes a pulsating sensation in the abdomen. Persistent, unexplained back pain—particularly in an older adult, someone with a smoking history, or someone with known aortic disease—should prompt a discussion with a clinician about whether an abdominal aneurysm needs to be excluded. Most back pain has other causes; a stable patient may be evaluated with ultrasound, with CT used when clinically indicated. [1,3,9]

Abdominal aortic aneurysm rupture: emergency symptoms

Rupture may cause sudden, severe abdominal, back, or flank pain, sometimes radiating to the groin, together with dizziness, fainting, profound weakness, sweating, low blood pressure, or collapse from internal bleeding. Occasionally the presentation is less typical. CALL EMERGENCY SERVICES IMMEDIATELY; do not wait for an outpatient ultrasound or routine appointment. [1,3,9]

Who should be screened?

Screening is not the same as surveillance. Screening looks for an aneurysm before one is known; surveillance tracks an established finding. Recommendations differ markedly for abdominal versus thoracic disease.

Situation	Recommended approach
Men aged 65–75 who have ever smoked	USPSTF: one-time abdominal ultrasound (Grade B); ACC/AHA: recommended for men ≥65 who ever smoked. [1, 3]
Men aged 65–75 who never smoked	USPSTF: selectively offer ultrasound based on risk factors and preferences (Grade C). Canadian Society for Vascular Surgery (CSVS): one-time screening for ALL men aged 65–80. These are different recommendations, not a universal consensus. [3, 6]
Women aged ≥65 who have ever smoked	ACC/AHA: ultrasound is reasonable. Society for Vascular Surgery (SVS): screen women 65–75 with tobacco history. USPSTF: evidence insufficient to determine net benefit in women 65–75 who smoked. [1, 3, 8]
Men or women aged ≥65 with a first-degree relative with AAA	ACC/AHA: abdominal ultrasound recommended. SVS also suggests screening first-degree relatives; individualize timing, especially for younger high-risk relatives. [1, 8]

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Women aged 65–80 with cardiovascular disease	CSVS supports screening women 65–80 with heart disease or smoking history; other bodies differ. Discuss personal risk and the potential benefits and harms. [6]
Adults younger than 65 with multiple AAA risk factors or family history	ACC/AHA: ultrasound may be considered. Not universal screening; assess smoking, family history, and other risks. [1]
Women who never smoked and have no AAA family history	USPSTF recommends AGAINST routine AAA screening (Grade D) in asymptomatic women; do not equate advocacy with screening everyone. [3]
Previously negative screening after age 75	ACC/AHA: do not routinely repeat a negative AAA screen in asymptomatic adults >75. [1]
First-degree relatives of thoracic aortic aneurysm/dissection patients	ACC/AHA: thoracic aortic imaging recommended; consider genetics and cascade screening. [1]
Asymptomatic people without thoracic risk factors	No recommendation for population-wide thoracic aortic imaging. [1]

For patients with a family history of AAA, aortic disease, a bicuspid valve, or a suspected hereditary disorder, clinicians may recommend imaging outside these age bands. A normal one-time AAA screening ultrasound generally does not require routine rescreening, unless clinical circumstances change. [1,3]

Patient advocacy matters: if you are a man aged 65 or older, ask whether a one-time abdominal aortic ultrasound is appropriate—even if you have never smoked. Women with smoking exposure, cardiovascular disease, or a family history should also ask. The correct decision depends on the applicable guideline, overall health, likelihood of benefiting from repair, and personal preferences. [1, 3, 6, 8]

Why clinicians may disagree about screening

The principal benefit is finding a dangerous but treatable aneurysm before rupture. Ultrasound is noninvasive and does not use ionizing radiation. Potential downsides include incidental findings, anxiety, repeated imaging, and complications from elective repair if an aneurysm is detected. Evidence for mortality benefit is strongest in older men, especially those with smoking exposure; evidence is less certain in women and low-risk groups. Recommendations therefore differ between the USPSTF, ACC/AHA, SVS, and Canadian vascular specialists. [1, 3, 6, 8]

A practical request whenever you have an echocardiogram

If you are undergoing an echocardiogram—particularly with a family history, bicuspid valve, known dilation, or other risk factors—ask: “Were my aortic root and visible ascending aorta measured, what were the actual diameters in centimeters, and was the visualization adequate?” Ask that measurements and limitations be recorded in the report. Echo does NOT reliably visualize the entire arch, descending thoracic aorta, or abdominal aorta; a normal echo does not exclude aneurysms elsewhere. If an area is poorly seen or the clinical risk is significant, discuss CT angiography or MRI with your clinician. Do not assume that every routine echo includes a comprehensive aortic study. [1,2]

After diagnosis: build a written management plan

- Confirm location, maximum diameter, measurement technique, and extent of disease; establish baseline CT/MRI when appropriate, and assess the aortic valve.
- Arrange cardiology, vascular surgery, or an experienced multidisciplinary aortic team as appropriate; consider genetic counseling and family screening.
- Control blood pressure, stop smoking, treat associated cardiovascular disease, and address lipid risk when clinically indicated. Medication selection depends on aneurysm type and other conditions.
- Discuss safe aerobic and resistance activity; avoid extreme straining, breath-holding, and maximal lifting when advised, particularly with larger aneurysms. Individualize exercise restrictions rather than stopping all activity.
- Know the next imaging date, the diameter or growth threshold that would prompt earlier review, and emergency warning signs.

How often should an aneurysm be checked?

Surveillance is individualized by location, diameter, growth, family history, and genetic syndrome. The intervals below are common U.S. guideline starting points—not personal prescriptions. [1,2]

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Aneurysm / diameter	Typical imaging interval
Thoracic aortic aneurysm, newly diagnosed	Repeat TTE/CT/MRI after 6–12 months to establish growth; if stable, every 6–24 months. Shorter intervals for rapid growth, larger diameters, or genetic disease.
AAA 3.0–3.9 cm	Abdominal ultrasound every 3 years.
AAA men 4.0–4.9 cm; women 4.0–4.4 cm	Ultrasound annually.
AAA men ≥5.0 cm; women ≥4.5 cm	Ultrasound approximately every 6 months while awaiting repair decision.

Use comparable measurement methods and, when feasible, the same imaging facility. If symptoms arise or the aneurysm expands rapidly, reassessment may be urgent regardless of the scheduled interval. [1,2]

When is treatment needed?

Treatment depends on which segment is enlarged, the maximum diameter and growth rate, symptoms, anatomy, genetic conditions, and the patient's operative risk. Smaller, stable aneurysms are usually managed with blood-pressure control, smoking cessation, appropriate cardiovascular prevention, and planned imaging. Symptomatic or rapidly enlarging aneurysms require prompt specialist assessment. [1]

Ascending aorta and aortic root (chest)

Repair generally requires open heart surgery, often replacing the enlarged aortic segment with a synthetic graft; root surgery may preserve or replace the aortic valve. For sporadic root/ascending aneurysms, surgery is generally indicated at ≥5.5 cm, or earlier for attributable symptoms or rapid growth; at experienced centers, ≥5.0 cm can be reasonable in selected patients. Heritable disease, bicuspid aortic valves, and body-size considerations can lower thresholds. Conventional endovascular stent-grafting is not the standard approach for the ascending aorta. [1]

Aortic arch (chest)

Arch repair is especially complex because branches supply the brain and arms. Options at specialist centers include open arch replacement, sometimes using a staged "elephant trunk" or frozen-elephant-trunk graft, and selected hybrid procedures combining branch-vessel surgery with endovascular stent grafts. The plan depends on which arch segments and branches are involved; there is no single diameter rule applicable to every arch aneurysm. [1]

Descending thoracic aorta (chest)

For suitable anatomy without certain connective-tissue disorders, thoracic endovascular aortic repair (TEVAR)—a stent graft delivered through an artery, usually in the groin—is generally preferred when repair is indicated. Open replacement is an alternative for unsuitable anatomy, some genetic conditions, or selected younger patients. Repair is generally recommended at ≥5.5 cm, with individualized earlier consideration for rapid growth, symptoms, or other high-risk features. TEVAR may reduce early procedural morbidity but requires lifelong imaging and sometimes repeat intervention. [1]

Abdominal aorta (AAA)

Two principal options are endovascular aneurysm repair (EVAR), using a stent graft placed through the groin arteries, and open surgical replacement with a synthetic graft. EVAR usually offers shorter initial recovery but demands ongoing surveillance for endoleaks, graft movement, and aneurysm enlargement; open repair is more invasive but may be more durable for suitable patients. Repair is generally recommended at ≥5.5 cm in men and ≥5.0 cm in women, or earlier if symptomatic or otherwise high risk. Choice depends on the aneurysm's relationship to the kidney arteries, vessel anatomy, age, overall health, and preferences. [1, 8]

After repair: surveillance remains essential

Patients need an individualized follow-up plan after either open or endovascular repair. Endovascular procedures especially require serial ultrasound or CT/MR imaging to detect endoleaks, graft migration, and sac enlargement; surveillance after open repair also matters. [1]

Well-known losses: why awareness matters

Actor John Ritter died in 2003 after an acute aortic dissection; his family later established the John Ritter Foundation for Aortic Health. U.S. Senator Lindsey Graham died in July 2026, with an aortic dissection identified in contemporary reporting and a

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preliminary medical examiner finding. These examples illustrate the potentially catastrophic nature of acute aortic disease. A dissection is a tear within the aortic wall and is not synonymous with rupture of a previously known aneurysm. [5, 11]

The Metabolism-U perspective

Aortic disease is a compelling example of why “feeling healthy” is not a substitute for risk assessment. Many people with aneurysms exercise, work, and feel entirely well. Knowing that an aneurysm is present allows patients and clinicians to control modifiable risks, plan surveillance, consider family testing, and arrange elective treatment before an emergency develops. Screening should be targeted rather than indiscriminate: the right test, for the right person, at the right time.

Ask your clinician: “Do my age, smoking history, family history, valve findings, or other risks justify aortic imaging—and if an aneurysm is present, what is my documented follow-up plan?”

A practical call to action

Aortic aneurysms often give no warning before a life-threatening complication. Ask whether your age, smoking history, family history, valve findings, or unexplained symptoms justify imaging. If you already have an aneurysm, know its precise location, diameter, next imaging date, and the symptoms that require emergency care. Advocate for appropriate assessment—not indiscriminate testing—and make sure abnormal findings are followed by a documented surveillance and treatment plan.

Scientific references and clinical guidance

[1] Isselbacher EM, et al. 2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease. Circulation. 2022. https://pmc.ncbi.nlm.nih.gov/articles/PMC9876736/

[2] Mazzolai L, et al. 2024 ESC Guidelines for the management of peripheral arterial and aortic diseases. Eur Heart J. 2024;45:3538–3700. https://academic.oup.com/eurheartj/article/45/36/3538/7738955

[3] US Preventive Services Task Force. Abdominal Aortic Aneurysm: Screening. JAMA. 2019. https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/abdominal-aortic-aneurysm-screening

[4] Centers for Disease Control and Prevention. About Aortic Aneurysm. https://www.cdc.gov/heart-disease/about/aortic-aneurysm.html

[5] The John Ritter Foundation for Aortic Health. John Ritter. https://johnritterfoundation.org/john-ritter/

[6] Canadian Society for Vascular Surgery. Screening for abdominal aortic aneurysms in Canada: 2020 review and position statement. CMAJ. 2021. https://pmc.ncbi.nlm.nih.gov/articles/PMC8526155/

[7] Canadian Task Force on Preventive Health Care. Abdominal Aortic Aneurysm—Clinician Summary. https://canadiantaskforce.ca/abdominal-aortic-aneurysm-clinician-summary/

[8] Society for Vascular Surgery. Practice guidelines: screening and surveillance of AAA. https://vascular.org/node/87

[9] National Heart, Lung, and Blood Institute. Aortic Aneurysm—Symptoms. https://www.nhlbi.nih.gov/health/aortic-aneurysm/symptoms

[10] American Heart Association. Types of Aneurysms; Your Aorta: The Pulse of Life. https://www.heart.org/en/health-topics/aortic-aneurysm/types-of-aneurysms

[11] Associated Press. Sen. Lindsey Graham likely died after aorta tear, medical examiner says (July 2026). https://apnews.com/article/bfa556e170f2df22ce9ffc7165da3dfa

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