

Table 1. ACC/AHA 2025 GL on ACHD. Features Suggestive of Hemodynamic Significance in Coarctation of the Aorta

Diagnostic Test	Index	Findings
Upper-to-lower extremity systolic blood pressure gradient	Systolic blood pressure	>20 mm Hg
Transthoracic echocardiography	Doppler mean gradient	>20 mm Hg*†
	Corrected COA MIG	>20 mm Hg*†
	Doppler profile	Diastolic tail in the descending aorta and diastolic forward flow in abdominal aorta
Cardiac catheterization	COA peak-to-peak gradient	>20 mm Hg*
MRA/CTA	Aortic isthmus ratio	<0.5–0.7
	Angiogram	Collateral arteries

*Gradients may be lower in the context of LV dysfunction, severe aortic stenosis, or extensive collateral arteries. Of the Doppler-derived COA gradients, COA mean gradient provides the best approximation for catheterization-derived peak-to-peak gradient. Although corrected and uncorrected maximum instantaneous gradient both have similar correlations with catheterization-derived peak-to-peak gradient, the threshold to detect peak-to-peak gradient >20 mm Hg is different for both indices.⁴⁵ †In repaired aortic coarctation, Doppler gradients may be elevated, even without narrowing, because of poor arterial compliance and pressure recovery.

COA indicates coarctation of the aorta; CTA, computed tomography angiography; MIG, maximum instantaneous gradient; and MRA, magnetic resonance angiography.

Table 2. ACC/AHA 2025 GL on ACHD.

Recommendations for Coarctation of the Aorta

Diagnostic

In adults with unrepaired COA, cross-sectional imaging is recommended to determine COA severity and delineate anatomy of the thoracic aorta.	1 B-NR
In adults with repaired COA, periodic cross-sectional imaging is recommended to screen for recurrent COA, aortic root/ascending aorta aneurysms, and vascular complications related to COA repair (focal aortic aneurysm/pseudoaneurysms/dissection, and stent fracture).	1 B-NR
In adults with COA, blood pressure measurement at rest in the upper and lower extremities is recommended as part of routine clinical assessment to screen for hypertension and residual/recurrent COA.	1 B-NR
In adults with COA, ambulatory blood pressure measurement is reasonable to diagnose hypertension and monitor response to antihypertensive therapy.	2a B-NR
In adults with COA, exercise testing is reasonable to screen for exercise-induced hypertension.	2a B-NR
In adults with COA who present with exertional symptoms, evaluation for coronary artery disease is reasonable to guide management.	2a B-NR

In adults with COA, screening for intracranial aneurysms by brain MR or CT angiography may be considered to guide management.

2b B-NR

Therapeutic

In adults with native or repaired COA, surgical or transcatheter stent therapy is recommended for anatomically and hemodynamically significant COA to prevent irreversible LV dysfunction from chronic pressure overload.

1 B-NR

In adults with native or repaired COA and hypertension without hemodynamically significant COA, GDMT for hypertension is recommended to maintain controlled resting and ambulatory blood pressure.

1 B-NR

Routine Follow-Up and Testing Intervals

Type of Follow-Up or Testing	Physiological Stage A* (mo)	Physiological Stage B* (mo)	Physiological Stage C* (mo)	Physiological Stage D* (mo)
Outpatient ACHD cardiologist	24	24	6-12	3-6
Electrocardiogram	24	24	12	12
Transthoracic echocardiogram†	24	24	12	12

†Routine transthoracic echocardiography may be unnecessary if CMR imaging is performed to assess aortic anatomy.

Table 3. ESC 2020 GL on ACHD. Recommendations for intervention in coarctation and re-coarctation of the aorta.

Repair of coarctation or re-coarctation (surgically or catheter based) in hypertensive patients^c with an increased non-invasive gradient between upper and lower limbs confirmed with invasive measurement (peak-to-peak $> _20$ mmHg) with preference for catheter treatment (stenting), when technically feasible.

I C

Catheter treatment (stenting) in hypertensive patients^a with $> _50\%$ narrowing relative to the aortic diameter at the diaphragm, even if the invasive peak-to-peak gradient is <20 mmHg, when technically feasible.

IIa C

Catheter treatment (stenting) in normotensive patients^a with an increased non-invasive gradient confirmed with invasive measurement (peak-to-peak $> _20$ mmHg), when technically feasible.

IIa C

Catheter treatment (stenting) in normotensive patients^a with $> _50\%$ narrowing relative to the aortic diameter at the diaphragm, even if the invasive peak-to-peak gradient is <20 mmHg, when technically feasible.

IIb C

^a Right arm ambulatory blood pressure monitoring should be considered for the diagnosis of hypertension.

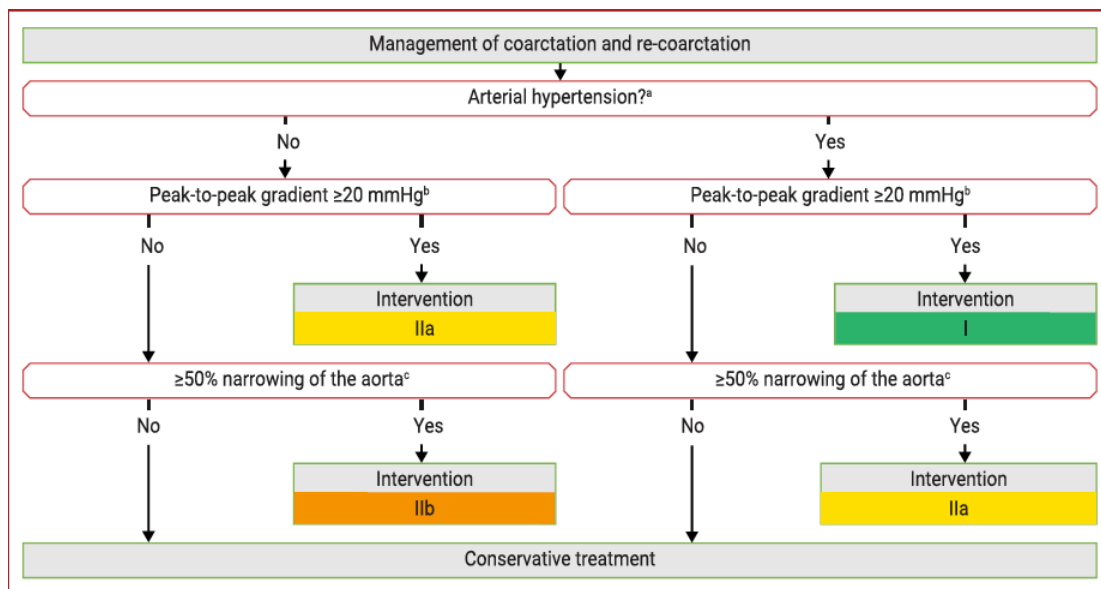


Figure 1. ESC 2020 GL on ACHD. Management of coarctation and re-coarctation of the aorta.

CoA = coarctation of the aorta.

a Right arm ambulatory blood pressure should be considered for diagnosis.

b Invasively confirmed measurement.

c Relative to the aortic diameter at the diaphragm.

Table 4. 2024 ESC Guidelines for the management of peripheral arterial and aortic diseases. Recommendations for evaluation and medical treatment of patients with coarctation of the aorta

In patients with native or repaired coarctation, lifelong follow-up is recommended, including regular imaging of the aorta with CCT/CMR every 3–5 years (adapted to clinical status and previous imaging findings). ^{1534,1535}	I	B
Coarctation or re-coarctation repair (either surgical or endovascular) is indicated in patients with hypertension with an increased non-invasive gradient between the upper and lower limbs (decreased ABI) confirmed with invasive measurement (peak-to-peak >20 mmHg), with a preference for stenting when technically feasible. ¹⁵³⁶	I	C
In patients with coarctation, BP measurements at both arms and one lower extremity are recommended.	I	C
It is recommended to treat hypertension in patients with coarctation according to ESC hypertension guidelines. ³⁰⁰	I	C
Endovascular treatment should be considered in patients with hypertension with >50% narrowing relative to the aortic diameter at the diaphragm, even if the invasive peak-to-peak gradient is <20 mmHg, when technically feasible. ¹⁵³⁷	IIa	C
Endovascular treatment should be considered in normotensive patients with an increased non-invasive gradient confirmed with invasive peak-to-peak gradient >20 mmHg, when technically feasible. ¹⁴⁶⁸	IIa	C

ABI, ankle-brachial index; BP, blood pressure; CCT, cardiovascular computed tomography; CMR, cardiovascular magnetic resonance; ESC, European Society of Cardiology.

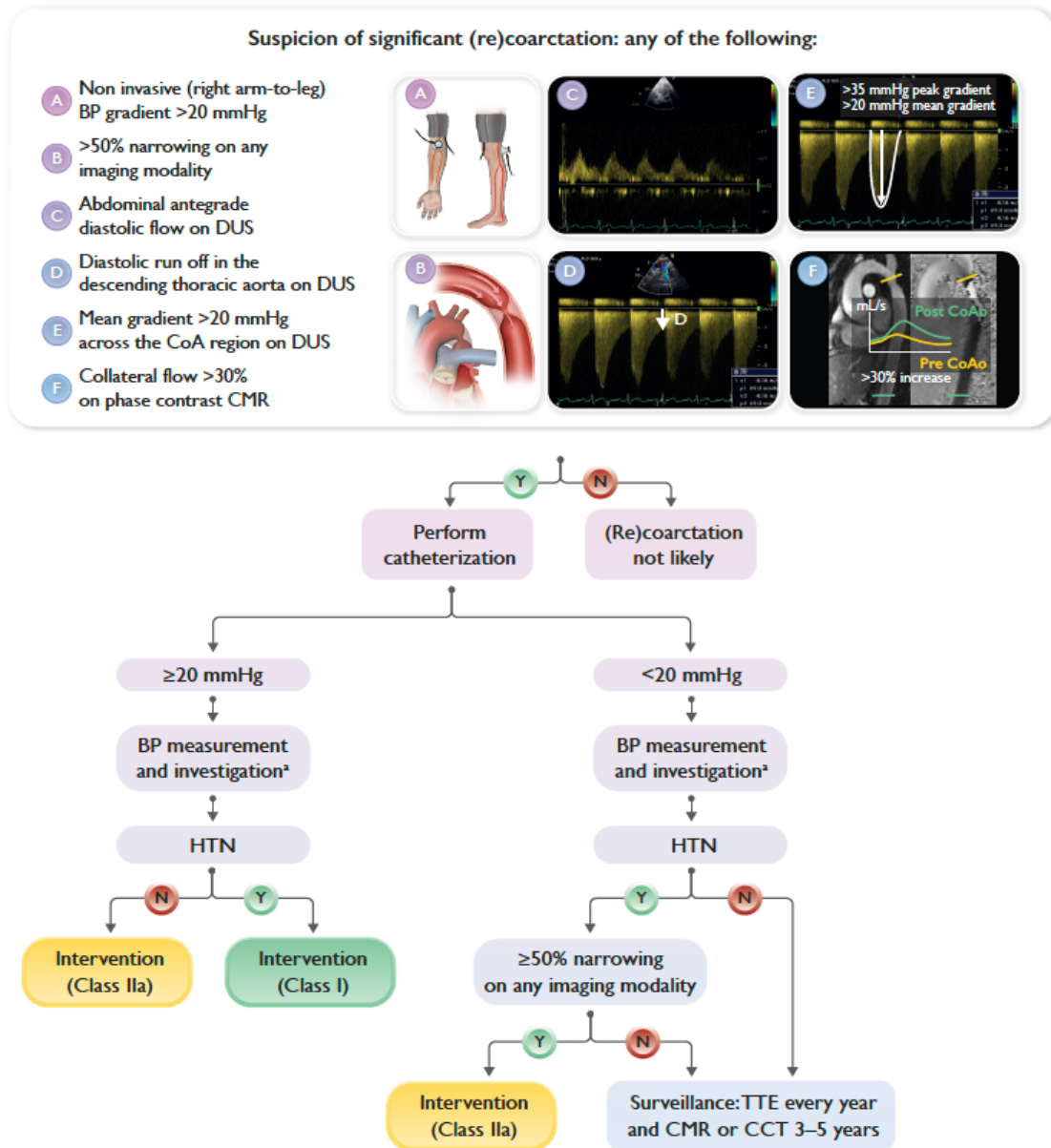


Figure 2. 2024 ESC Guidelines for the management of peripheral arterial and aortic diseases. Criteria for significant coarctation/re-coarctation of the aorta and management algorithm.

BP, blood pressure; CCT, cardiovascular computed tomography; CMR, cardiovascular magnetic resonance; CoA, coarctation of the aorta; DUS, duplex ultrasound; HTN, hypertension; TTE, transthoracic echocardiography.

^a Diagnosis of hypertension may require confirmation with ambulatory BP measurement and should also be considered in cases of exercise-induced hypertension and/or left ventricular hypertrophy on TTE.

Table 5. 2025 ESC 2025 Guidelines on pregnancy.

ACHD	Maternal Risk	Obstetric and foetal risk	Monitoring	Pregnancy management and delivery
Coarctation of the aorta	• ↑ Complication risk if residual obstruction (gradient >20 mmHg, aortic lumen <12 mm), clinical signs of HF, LVEF <40%, NYHA class>1⁹ • ↑ Risk of aortic dissection (if aneurysm present) • Uncontrolled hypertension⁹	• ↑ Miscarriage rate⁴⁵³ • Pre-term birth and low birth weight in 9%⁹	• Close BP monitoring —also early post-partum • Pre-pregnancy CMR and treatment of residual lesions⁴⁵⁴	• Treat hypertension^a • Consider bed rest, hospital admission and stenting in case of severe symptomatic (re)coarctation (including refractory hypertension or maternal/foetal compromise)⁴⁵⁵ • Vaginal delivery preferred unless aneurysm, HF, severe hypertension