

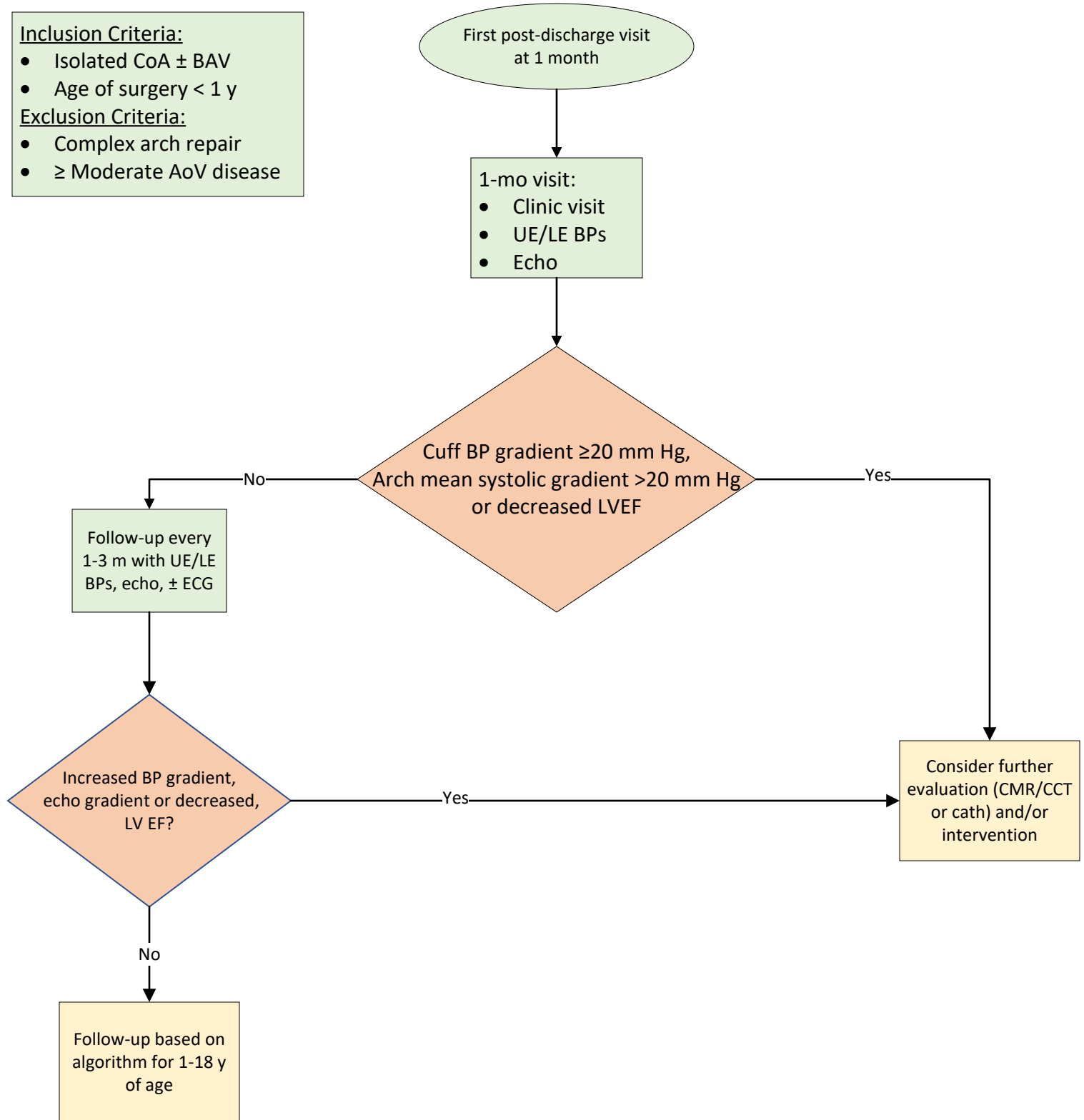
CHD Clinical Practice Algorithm: Repaired Coarctation Algorithm < 1 Year¹⁻³

Inclusion Criteria:

- Isolated CoA ± BAV
- Age of surgery < 1 y

Exclusion Criteria:

- Complex arch repair
- ≥ Moderate AoV disease



CHD Clinical Practice Algorithm: Repaired Coarctation Algorithm 1-18 Years of Age³⁻⁹

Inclusion Criteria:

- Isolated CoA ± BAV
- Age 1-18 y

Exclusion Criteria:

- Complex arch repair
- ≥ Moderate AoV disease
- Pregnancy

Repaired CoA
(1-18 y)

Follow-up:

1 mo post-op, then:

- Every 6-12 mo (toddler, <1 y postop)
- Every 1-2 y (older child, ≤ mild residual)

Routine Follow-Up Visits

- UE/LE BPs
- ECG
- Echo
- CV risk assessment and counseling (HTN, obesity, dyslipidemia)

Additional Testing

- **ABPM** every 1-2 y (when available)
- **CPET** every 2-3 y (pts >age 10 y, exertional symptoms, athletes)
- **CMR/CCT** baseline as teenager, then every 3-5 y

Any of the following present?

- Symptomatic
- Resting HTN
- UE vs. LE BP gradient >20 mm Hg
- Echo Doppler: mean systolic gradient >20 mm Hg or obstructive pattern
- LVH
- Decreased LV function
- Exaggerated BP response to exercise (>50-80 mm Hg change above resting)
- Anatomical evidence of significant recoarctation

No

Yes

Optimize medical management, obtain CMR/CCT, or consider intervention

CHD Clinical Practice Algorithm: Repaired Coarctation Algorithm ≥18 Years of Age⁸⁻¹⁰

Inclusion Criteria:

- Isolated CoA ± BAV
- Age >18 y

Exclusion Criteria:

- Complex arch repair
- ≥ Moderate AoV
- Pregnancy

Repaired CoA
(≥18 y)

Initial Standard Workup

- UE/LE BP
- ECG
- Echo
- Consider cardiopulmonary stress test (CPET)
- CMR vs. CCT
 - * Consider at baseline if limited echo images and/or concerns of recurrent CoA
- Consider ABPM
 - * Diagnostic if 24-h mean SBP >130 mm Hg and/or DBP >80 mm Hg
- Consider screening for cerebral aneurysm

Follow-up Schedule:

Every 1-2 y: Visit, ECG, echo,
consider ABPM

Every 2-3 y: CPET

Every 3-5 y: CMR/CCT

Abnormal Findings:

- Resting NIBP gradient >20 mm Hg or decreased femoral pulses
- Abnormal ABPM

No

Yes

Conservative/Medical
Management

Additional Abnormal Findings?

- Mean Doppler systolic gradient >20 mm Hg
- NIBP gradient >10 mm Hg or mean Doppler gradient >10 mm Hg, plus either decreased LV systolic function or AI
- Resting NIBP gradient >10 mm Hg or mean Doppler gradient >10 mm Hg, with collateral flow
- Narrowing >50% relative to aortic diameter at level of diaphragm

No

Yes

Intervention:

- Catheter based, when feasible
- Surgical

Abbreviation Key

ABPM = ambulatory blood pressure monitor; AI = aortic insufficiency; AoV = aortic valve; BAV = bicuspid aortic valve; BP = blood pressure; cath = catheterization; CCT = cardiac computed tomography; CHD = congenital heart disease; CMR = cardiac magnetic resonance; CoA = coarctation of the aorta; CPET = cardiopulmonary exercise testing; CV = cardiovascular; DBP = diastolic blood pressure; ECG = electrocardiography; echo = echocardiography; HTN = hypertension; LE = lower-extremity; LV = left ventricular; LVEF = left ventricular ejection fraction; LVH = left ventricular hypertrophy; NIBP = noninvasive blood pressure; postop = postoperative; pts = patients; SBP = systolic blood pressure; UE = upper-extremity.

References

1. McElhinney DB, Yang SG, Hogarty AN, et al. Recurrent arch obstruction after repair of isolated coarctation of the aorta in neonates and young infants: is low weight a risk factor? *J Thorac Cardiovasc Surg* 2001;122:883-90.
2. Marx GR, Allen HD. Accuracy and pitfalls of Doppler evaluation of the pressure gradient in aortic coarctation. *J Am Coll Cardiol* 1986;7:1379-85.
3. Aldousany AW, DiSessa TG, Alpert BS, Birnbaum SE, Willey ES. Significance of the Doppler-derived gradient across a residual aortic coarctation. *Pediatr Cardiol* 1990;11:8-14.
4. Sachdeva R, Valente AM, Armstrong AK, et al. ACC/AHA/ASE/HRS/ISACHD/SCAI/SCCT/SCMR/SOPE 2020 appropriate use criteria for multimodality imaging during the follow-up care of patients with congenital heart disease: a report of the American College of Cardiology Solution Set Oversight Committee and Appropriate Use Criteria Task Force, American Heart Association, American Society of Echocardiography, Heart Rhythm Society, International Society for Adult Congenital Heart Disease, Society for Cardiovascular Angiography and Interventions, Society of Cardiovascular Computed Tomography, Society for Cardiovascular Magnetic Resonance, and Society of Pediatric Echocardiography. *J Am Coll Cardiol* 2020;75:657-703.
5. Flynn JT, Kaelber DC, Baker-Smith CM, et al.; Subcommittee on Screening and Management of High Blood Pressure in Children. Clinical practice guideline for screening and management of high blood pressure in children and adolescents. *Pediatrics* 2017;Aug 21:[Epub ahead of print].
6. Luitingh TL, Lee MGY, Jones B, et al. A cross-sectional study of the prevalence of exercise-induced hypertension in childhood following repair of coarctation of the aorta. *Heart Lung Circ* 2019;28:792-9.
7. Clarke MM, Zannino D, Stewart NP, et al. Normative blood pressure response to exercise stress testing in children and adolescents. *Open Heart* 2021;8:e001807.
8. Stout KK, Daniels CJ, Aboulhosn JA, et al. 2018 AHA/ACC guideline for the management of adults with congenital heart disease: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *J Am Coll Cardiol* 2019;73:e81-e192.
9. Feltes TF, Bacha E, Beekman RH 3rd, et al.; American Heart Association Congenital Cardiac Defects Committee of the Council on Cardiovascular Disease in the Young, Council on Clinical Cardiology, Council on Cardiovascular Radiology and Intervention, American Heart Association. Indications for cardiac catheterization and intervention in pediatric cardiac disease: a scientific statement from the American Heart Association. *Circulation* 2011;123:2607-52.
10. Baumgartner H, De Backer J, Babu-Narayan SV, et al.; ESC Scientific Document Group. 2020 ESC guidelines for the management of adult congenital heart disease. *Eur Heart J* 2021;42:563-645.