

# Evidence Discussion (CD 11)

---

## Adult Congenital Heart Disease Imaging

- Management of Adult Congenital heart (ACHD) disease involves a multimodal imaging approach. Multimodal imaging helps account for patient-specific considerations, strengths and weaknesses of each modality, institutional resources, and available expertise. Approaches to limit and monitor radiation exposure are recommended during imaging of individuals with ACHD, and studies that do not involve ionization radiation should be prioritized whenever appropriate.
- Echocardiogram, MRI, CT, Cath, and nuclear stress testing all have strengths and weaknesses, including varying radiation levels, temporal resolution, spatial resolution, and ability to image blood flow. Advantages of the various modalities are as follows: MRI has the ability to image the right ventricle in 3 dimensions; Echocardiograms include high temporal resolution and availability, and the ability to measure pressures with catheterizations; Cardiac CTs have the ability to rapidly acquire 3D imaging; and nuclear imaging allows the ability to measure myocardial perfusion concerns.

## References

- 1) 2023 American College of Radiology ACR Appropriateness Criteria® Congenital or Acquired Heart Disease, <https://acsearch.acr.org/docs/3102389/Narrative/>
- 2) 2020 ESC Guidelines for the management of adult congenital heart disease, European Heart Journal(2020)00,1 83
- 3) 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, Circulation. 2019;139:e698–e800
- 4) ACC/AATS/AHA/ASE/ASNC/HRS/SCAI/SCCT/SCMR/STS 2019 Appropriate Use Criteria for Multimodality Imaging in the Assessment of Cardiac Structure and Function in Nonvalvular Heart Disease
- 5) Recommendations on the Use of Multimodality Cardiovascular Imaging in Young Adult Competitive Athletes: A Report from the American Society of Echocardiography in Collaboration with the Society of Cardiovascular Computed Tomography and the Society for Cardiovascular Magnetic Resonance, <https://doi.org/10.1016/j.echo.2020.02.009>

- 6) ACC/AATS/AHA/ASE/ASNC/HRS/SCAI/SCCT/SCMR/STS 2019 Appropriate Use Criteria for Multimodality Imaging in the Assessment of Cardiac Structure and Function in Nonvalvular Heart Disease: A Report of the American College of Cardiology Appropriate Use Criteria Task Force, American Association for Thoracic Surgery, American Heart Association, American Society of Echocardiography, American Society of Nuclear Cardiology, Heart Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Cardiovascular Computed Tomography, Society for Cardiovascular Magnetic Resonance, and the Society of Thoracic
- 7) Valente AM, Cook S, Festa P, et al. Multimodality Imaging Guidelines for Patients with Repaired Tetralogy of Fallot: A Report from the American Society of Echocardiography. *J Am Soc Echocardiogr.* 2014;27(2):111-141. doi:10.1016/j.echo.2013.11.009.
- 8) Simpson J, Lopez L, Acar P, et al. Three-dimensional Echocardiography in Congenital Heart Disease: An Expert Consensus Document from the European Association of Cardiovascular Imaging and the American Society of Echocardiography. *J Am Soc Echocardiogr.* 2017;30(1):1-27. doi:10.1016/j.echo.2016.08.022.
- 9) Cohen MS, Eidem BW, Cetta F, et al. Multimodality Imaging Guidelines of Patients with Transposition of the Great Arteries: A Report from the American Society of Echocardiography Developed in Collaboration with the Society for Cardiovascular Magnetic Resonance and the Society of Cardiovascular Computed Tomography. *J Am Soc Echocardiogr.* 2016;29(7):571-621. doi:10.1016/j.echo.2016.04.002
- 10) ACC/AHA 2008 Guidelines for the Management of Adults With Congenital Heart Disease