



# Guideline: CT Specific Measurements for TAVR



April 2017

## Valve Size and Type

Region of Interest	Specific Measurements	Measurement Technique	Additional Comments
Aortic Valve Morphology and Function	Aortic valve	<ul style="list-style-type: none"><li>• If cine images obtained, qualitative evaluation of valve opening</li><li>• Planimetry of aortic valve area in rare cases</li><li>• Calcium score with Agatston technique or a volumetric technique to quantify calcification of the aortic valve</li></ul>	Most useful in cases of LFLG AS where diagnosis is otherwise unclear. May be helpful in defining number of valve cusps.
LV Geometry and Other Cardiac Findings	LV outflow tract	<ul style="list-style-type: none"><li>• Measured with a double oblique plane at narrowest portion of the LV outflow tract</li><li>• Perimeter</li><li>• Area</li><li>• Qualitative assessment of calcification</li></ul>	Quantification of calcification not standardized. Large eccentric calcium may predispose for paravalvular regurgitation and annular rupture during valve deployment.
Annular Sizing	Aortic annulus	<ul style="list-style-type: none"><li>• Defined as a double oblique plane at insertion point of all 3 coronary cusps</li><li>• Major/minor diameter</li><li>• Perimeter</li><li>• Area</li></ul>	Peri-procedural TEE and/or balloon sizing can confirm dimensions during case.

Aortic Root Measurements	Sinus of valsalva	<ul style="list-style-type: none"> <li>• Height from annulus to superior aspect of each coronary cusp</li> <li>• Diameter of each coronary cusp to the opposite commissure</li> <li>• Circumference around largest dimension</li> <li>• Area of the largest dimension</li> </ul>	
Coronary and Thoracic Anatomy	Coronary arteries	Height from annulus to inferior margin of left main coronary artery and the inferior margin of the right coronary artery	<ul style="list-style-type: none"> <li>• Short coronary artery height increases risk of procedure.</li> <li>• Evaluation of coronary artery and bypass graft stenosis on select studies. Estimate risk of coronary occlusion during valve deployment.</li> </ul>
	Aortic root angulation	<ul style="list-style-type: none"> <li>• Angle of root to left ventricle</li> <li>• Three-cusp angulation to predict best fluoroscopy angle</li> </ul>	Reduce procedure time and contrast load by reducing number of peri-procedural root injections.

## Vascular Access Planning

Region of Interest	Specific Measurements	Measurement Technique	Additional Comments
Vascular Access	Aorta	<ul style="list-style-type: none"> <li>• Major/minor diameters of the following: <ul style="list-style-type: none"> <li>▪ Aorta at sinotubular junction</li> <li>▪ Ascending aorta in widest dimension</li> <li>▪ Ascending aorta prior to brachiocephalic artery</li> <li>▪ Midaortic arch</li> <li>▪ Descending aorta at isthmus</li> <li>▪ Descending aorta at level of pulmonary artery</li> <li>▪ Descending aorta at level of diaphragm</li> <li>▪ Abdominal aorta at level of renal arteries</li> <li>▪ Abdominal aorta at the iliac bifurcation</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Measurements must be perpendicular to aorta in 2 orthogonal planes.</li> <li>• Identify aortopathies</li> <li>• Evaluate burden of atherosclerosis</li> <li>• Identify dissection or aneurysms</li> </ul>

Primary peripheral vasculature	<ul style="list-style-type: none"> <li>• Major/minor dimensions, tortuosity, calcification of the following: <ul style="list-style-type: none"> <li>▪ Carotid arteries</li> <li>▪ Subclavian arteries</li> <li>▪ Brachiocephalic artery</li> <li>▪ Vertebral arteries</li> <li>▪ Bilateral subclavian arteries</li> <li>▪ Great vessels</li> <li>▪ Iliac arteries</li> <li>▪ Femoral arteries</li> </ul> </li> </ul>	No well-defined cutoff or definition of tortuosity or calcification has been established.
Ancillary vasculature	<ul style="list-style-type: none"> <li>• Stenosis of the following: <ul style="list-style-type: none"> <li>▪ Celiac artery</li> <li>▪ Superior mesenteric artery</li> <li>▪ Both renal arteries</li> </ul> </li> </ul>	
Relationship of femoral bifurcation and femoral head	Distance from inferior margin of femoral head to femoral bifurcation	

2017 ACC Expert Consensus Decision Pathway for Transcatheter Aortic Valve Replacement in the Management of Adults With Aortic Stenosis  
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