

What Are The Differences Between The ACC/AHA And The European Guidelines On Ascending Aorta And Arch Disease

	CLASS I Benefit >>>Risk	CLASS IIa Benefit >>Risk	CLASS IIb Benefit ≥ Risk
Level A Multiple populations evaluated	TEAMWORK		
Level B Limited populations evaluated			
Level C Very limited populations evaluated			

OURANIA PREVENTZA MD, MBA, FACS
 George R. Minor Professor of Thoracic Surgery,
 Chief of Cardiothoracic Surgery
 Co-Director of Cardiovascular Service Line,
 University of Virginia Health
 Immediate Past President of
 International Society of Endovascular Specialists (ISEVS) 2021-2023

MORE SHORT HOT NEW TOPICS RELATED TO AORTIC DISEASE AND ITS TREATMENT
 November 19-23 2024

Disclosures

Consultant
W. L. Gore and Associates
Terumo Aortic
AbioMed
Intrinsa Vascular
Atrivion

MORE SHORT HOT NEW TOPICS RELATED TO AORTIC DISEASE AND ITS TREATMENT

Disclosures

And co- author of both guidelines documents

MORE SHORT HOT NEW TOPICS RELATED TO AORTIC DISEASE AND ITS TREATMENT

Circulation

2018 ACC/AHA/AATS/ACR/ASA/CACR/SIR/STS/SVM Guidelines for the Diagnosis and Management of Patients With Thoracic Aortic Disease

2010

- **2010**
- **First multisociety guidelines document on the management of aortic diseases**
- **Limited to the thoracic aorta**

(18 authors/ 7 cardiologists, 4 surgeons, 2 radiol, 1 EM, 1 neuro, 1 anesht, 1 genet., 1 CV nurse)
 827 references
 1,017 citations, 388,500 downloads (until march 2024)

2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease

Developed in **Collaboration with and endorsed by the American Association for Thoracic Surgery, American College of Radiology, Society of Cardiovascular Anesthesiologists, Society for Cardiovascular Angiography and Interventions, Society of Thoracic Surgeons, and Society for Vascular Surgery.**

Endorsed by Society for Interventional Radiology and Society for Vascular Medicine

Isselbacher EM, Preventza O, Black J, et al. 2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease. Circulation.

What happened between ? (2010—2022)

Surgey for aortic dilation in patients with bicuspid aortic valves
 A statement of endorsement from the American College of Cardiology Heart Association Task Force on Clinical Practice Guidelines.

2021 The American Association for Thoracic Surgery expert consensus document: Surgical treatment of acute type A aortic dissection

Current status and recommendations for use of the Bioreabsorbable tricuspid valve: a position paper by the European Society of Cardiology (ESC)

Editorial: Current Status and Recommendations for the Treatment of Thoracic Aortic Pathologies Involving the Aortic Arch: An Expert Consensus Document of the European Association for Cardio-Thoracic Surgery (EACTS) & the European Society for Vascular Surgery (ESVS)

2014 ESC Guidelines for the management of peripheral arterial and aortic diseases: Developed by the task force on the management of peripheral arterial and aortic diseases of the European Society of Cardiology (ESC) (Endorsed by the European Association for Cardio-Thoracic Surgery (EACTS), the European Reference Network on Rare Multisystemic Vascular Diseases (VASCERN), and the European Society of Vascular Medicine (ESVM))

1 societies, 1 specialty
Endorsed by others
Use of word: significant aortic dilation specifying the diameter or the indexed diameter value rather than the term 'aneurysm'

Presenters

Yolanda Coburn, MD, PhD 100th AATS President	Singhron Jha, MD ASCVTS President	Patrick Parinet, MD EACTS President
Isabelle Opat, MD ESTS President	Victor Deyan, MD LACES President	Thomas E. MacGillivray, MD STS President
Patrick Myers, MD EACTS Executive Director	John Mitchell, MD	Faisal Bakaeen, MD
Milan Mojovic, MD	Dora Hristache-Petrescu, MD	Kateri Wallace, MD
Durania Prevedina, MD, MBA, FACS	J. Joseph Woo, MD, PhD	John D. Mitchell, MD, PhD

Many guidelines today even from established societies and organizations suffer from inadequacies in guidelines development such as Failure to equitably represent different disciplines.....

Global Webinar on Guidelines
 What to think about when being asked to participate

“A guideline document is developed in collaboration with and endorsed by various societies (multidisciplinary)”

“Equitable representation is key to ensure the best evidence based information provided”

2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease: A Report of the American Heart Association/American College of Cardiology/American Stroke Association Task Force on Practice Guidelines

29 authors (US)
8 CT surgeons
7 cardiologists
7 vascular surgeons
1 pt advocate, 1 CV nurse, 1 anesh, 1 radiol, 1 genet, 1 EM, 1 staff(aha/acc)

Peer Reviewers Are Eligible for CME Credits

EACTS/STS Guidelines for diagnosing and treating acute and chronic syndromes of the aortic organ

26 authors
(22 CT surgeons, 2 cardiologist, 1 vasc surgeon, 1 radiol)

Recognize the aorta as an organ

February 2024

- Big step: Recognizing the aorta as an organ
- Treatment in close coordination with various specialties

vascular Specialist

EACTS and STS guidelines recognize aorta as an organ in its own right

Table 1 Levels of Evidence

Level of evidence A: Data derived from multiple randomized clinical trials or meta-analyses.

Level of evidence B: Data derived from a single randomized clinical trial or from large nonrandomized studies.

Level of evidence C: The consensus of expert opinion and/or small studies, retrospective studies, and registries.

Table 2 Classes of Recommendations

Class of recommendation	Definition	Practical meaning
Class I	Evidence and/or expert consensus that a given treatment or procedure is beneficial, useful, and effective.	It is recommended.
Class II	Conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of the given treatment or procedure.	Should be considered.
Class IIa	Weight of evidence and/or expert consensus favoring the usefulness/efficacy of a treatment or procedure.	May be considered.
Class IIb	Usefulness/efficacy is less well established by evidence and/or expert consensus.	May be considered.
Class III	Usefulness/efficacy cannot be determined.	Not recommended.

Writing style different ...
 II A: is reasonable = should be considered ???

Reasonable means that whatever decision was made is appropriate given the particular circumstances
Reasonable : a logical judgement, and makes sense in a fair and sensible way

Should be considered : an opinion or decision that someone has reached after a lot of thought

Recommendations for Surgery for Sporadic Aneurysms of the Aortic Root and Ascending Aorta

LOE B-NR

Isselbacher, EM, Prentizza O, Black J et al. 2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease. *Circulation*.

For patients with height or BSA outside of 1-2 SD of the mean, use:

- Aortic size index: aortic diameter (cm) / BSA (m²)
- Aortic height index: aortic diameter (cm) / patient height (m)
- Cross sectional area to height

Things important to practitioners who love the aorta

Isselbacher, EM, Prentizza O, Black J et al. 2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease. *Circulation*.

Root and ascending aorta

Recommendation Table 12: Chronic aortic disease: root and ascending aorta

Recommendation	Class	Level	LOE
Surgery for an ascending aortic aneurysm located at the root or tubular aorta, either with TAVI or BAV, is recommended when the maximum aortic diameter is ≥55 mm.	I	B	LOE B, 33A
Surgery for BAV-related aneurysms with root phenotype is recommended when the maximum aortic diameter is ≥50 mm.	I	B	33C, 34A, 34B, 35B
Surgery for TAVI-associated aneurysms with root phenotype should be considered when the maximum aortic diameter is ≥50 mm in a low surgical risk setting. ^a	IIa	B	33C, 34B, 35B
In patients with low surgical risk ^b and ascending phenotype/dilatation, both with TAVI and BAV, surgical treatment should be considered when the maximum aortic diameter is ≥55 mm.	IIa	C	-
In patients with low surgical risk and ascending phenotype/BAV-related aneurysm, surgery should be considered at a maximum diameter ≥50 mm if any of the following is present: • age <55 years • short stature (<1.63 m) ^c • ascending aortic length >12 cm ^d • aortic diameter growth rate >5 mm/year • family history of the acute aortic syndrome • aortic coarctation	IIa	C	-

55 mm remains as class 1 recommendation LOE B

European Journal of Cardio-Thoracic Surgery, Volume 65, Issue 2, February 2024

Take Home Messages

At centers with **Multidisciplinary Aortic Teams** and experienced surgeons, the **threshold for surgical intervention for sporadic aortic root and ascending aortic aneurysms** has been lowered **from 5.5 cm to 5.0 cm in selected patients, and even lower in specific scenarios** among patients with heritable thoracic aortic aneurysms. (II A)

Things important to practitioners who love the aorta

Isselbacher, EM, Prentizza O, Black J et al. 2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease. *Circulation*.

Root and ascending aorta

Recommendation Table 12: Chronic aortic diseases root and ascending aorta

Recommendations	Class	Level	Ref
Surgery for an ascending aortic aneurysm located at the root or tubular tract, either with TAVI or BAV, is recommended when the maximum aortic diameter is ≥ 50 mm.	I	B	1333, 1343
Surgery for BAV-related aortopathy with "root phenotype" is recommended when the maximum aortic diameter is ≥ 50 mm.	I	B	132, 84, 87, 1331
Surgery for TAVI-associated aortopathy with "root phenotype" should be considered when the maximum aortic diameter is ≥ 50 mm in a low-surgical-risk setting. ¹³	IIa	B	133, 134, 1341
In patients with low surgical risk and ascending phenotype BAV-related aortopathy, surgery should be considered at a maximum diameter ≥ 50 mm if any of the following is present: <ul style="list-style-type: none"> • age < 55 years • short stature (< 1.63 m)¹⁴ • ascending aortic length > 11 cm¹⁵ • aortic diameter growth rate > 0.5 mm/year • family history of the acute aortic syndrome • aortic coarctation 	IIa	C	-
In patients with low surgical risk and ascending phenotype BAV-related aortopathy, surgery should be considered at a maximum diameter ≥ 50 mm if any of the following is present: <ul style="list-style-type: none"> • age < 55 years • short stature (< 1.63 m)¹⁴ • ascending aortic length > 11 cm¹⁵ • aortic diameter growth rate > 0.5 mm/year • family history of the acute aortic syndrome • aortic coarctation 	IIa	C	-

Introduction of the 52 mm diameter (IIA)

Surgical treatment when the maximum aortic diameter is ≥ 52 mm (ascending phenotype, low surgical risk pts)

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In patients with purely tricuspid AV- non syndromic aortopathy who experienced ascending aortic dissection, those with root phenotype (younger/ more frequently male) dissected at significantly smaller diameters than patients with an ascending phenotype

CENTRAL ILLUSTRATION: Maximal Aortic Dilatation Location in Acute Type A Aortic Dissection

IRAD 1996-2016
667 pts /stratified by location of the largest aortic segment
MAD < 5.5 cm

Ganapathi AM, et al. J Am Coll Cardiol. 2022;79(19):1890-1897.

BAV

Recommendations for BAV Aortopathy Interventions: Replacement of the Aorta in Patients With BAV

Referenced studies that support the recommendations are summarized in the

COR	LOE	Recommendations
1	B-NR	1. In patients with a BAV and a diameter of the aortic root, ascending aorta, or both of ≥ 5.5 cm, surgery to replace the aortic root, ascending aorta, or both is recommended. ¹³
2a	B-NR	2. In patients with a BAV and a cross-sectional aortic root or ascending aortic area (cm ²) to height (m) ratio of ≥ 10 cm ² /m, surgery to replace the aortic root, ascending aorta, or both is reasonable, when performed by experienced surgeons in a Multidisciplinary Aortic Team. ¹⁴
2a	B-NR	3. In patients with a BAV, a diameter of the aortic root or ascending aorta of ≥ 4.0 cm to ≤ 5.4 cm, and an additional risk factor for aortic dissection (Table 14), surgery to replace the aortic root, ascending aorta, or both is reasonable, when performed by experienced surgeons in a Multidisciplinary Aortic Team. ¹³

Table 14. Risk Factors for Aortic Dissection

Family history of aortic dissection	
Aortic growth rate ≥ 0.3 mm/y	
Aortic coarctation	
"root phenotype" aortopathy	

4. In patients with a BAV who are undergoing surgical aortic valve repair or replacement¹⁶ and who have a diameter of the aortic root or ascending aorta of ≥ 4.5 cm, or other risk factors for aortic dissection (Table 14), and at low surgical risk, surgery to replace the aortic root, ascending aorta, or both may be reasonable, when performed by experienced surgeons in a Multidisciplinary Aortic Team.¹³

5. In patients with a BAV, a diameter of the aortic root or ascending aorta of ≥ 4.0 cm to ≤ 5.4 cm, no other risk factors for aortic dissection (Table 14), and at low surgical risk, surgery to replace the aortic root, ascending aorta, or both may be reasonable, when performed by experienced surgeons in a Multidisciplinary Aortic Team.¹³

Issebacher, EM, Preventza O, Black J et al. 2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease. Circulation.

Patients with dilation of the aortic root "root phenotype" represent 10% to 20% of patients with BAV and aortopathy and may have more rapid aortic growth and an increased risk of aortic complications (RL cusp fusion, male and AI).

Root and ascending aorta

Recommendation Table 12: Chronic aortic diseases root and ascending aorta

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In patients with low surgical risk and ascending phenotype BAV-related aortopathy, surgery should be considered at a maximum diameter ≥ 50 mm if any of the following is present: <ul style="list-style-type: none"> • age < 55 years • short stature (< 1.63 m)¹⁴ • ascending aortic length > 11 cm¹⁵ • aortic diameter growth rate > 0.5 mm/year • family history of the acute aortic syndrome • aortic coarctation 	IIa	C	-
In patients with low surgical risk and ascending phenotype BAV-related aortopathy, surgery should be considered at a maximum diameter ≥ 50 mm if any of the following is present: <ul style="list-style-type: none"> • age < 55 years • short stature (< 1.63 m)¹⁴ • ascending aortic length > 11 cm¹⁵ • aortic diameter growth rate > 0.5 mm/year • family history of the acute aortic syndrome • aortic coarctation 	IIa	C	-

BAV with "root phenotype"

Surgical treatment when the maximum aortic diameter is ≥ 50 mm

Class I, LOE B

We know that there is increased aortic risk related to the root phenotype

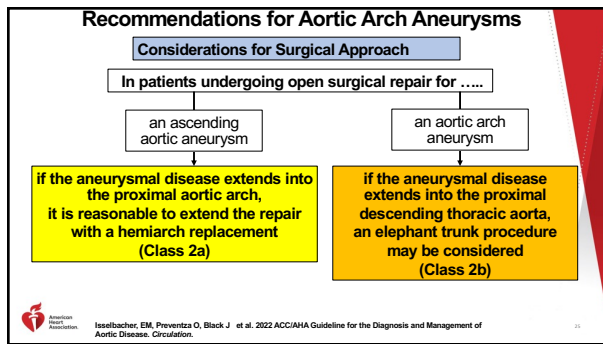
But are the data conclusive and is the evidence strong for class I??

European Journal of Cardio-Thoracic Surgery, Volume 65, Issue 2, February 2024

Recommendations for Aortic Arch Aneurysms

cm, centimeter

Issebacher, EM, Preventza O, Black J et al. 2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease. Circulation.



Recommendations	Class*	Level†
In patients with low or intermediate operative risk with an aortic arch aneurysm and recurrent episodes of chest pain not attributable to non-aortic causes, open surgical replacement of the arch is recommended. ^{11,172}	I	C
In patients with an isolated aortic arch aneurysm who are asymptomatic and have low operative risk, open surgical replacement should be considered at an arch diameter of ≥3.5 cm. ^{11,172,173}	IIa	B
In patients undergoing open surgical repair of an ascending aortic aneurysm, concomitant hemi-arch replacement should be considered if the dilatation extends into the proximal aortic arch (>50 mm). ^{11,172,174}	IIa	C
In patients undergoing open surgical repair of an aortic arch aneurysm, an elephant trunk or frozen elephant trunk procedure should be considered if the aneurysmal disease extends into the proximal descending thoracic aorta. ^{11,172,175,176}	IIa	C
In patients undergoing open surgical repair of an ascending aortic aneurysm, concomitant hemi-arch or arch replacement may be considered in experienced centers if the dilatation extends into the aortic arch (>45 mm). ^{11,172,177}	IIb	C
In patients with an aortic arch aneurysm who meet criteria for intervention but have high surgical risk, a hybrid or endovascular approach may be considered. ^{11,172}	IIb	C

II a vs II B (ACC/AHA)

ESC European Society of Cardiology

What Are The Differences Between The ACC/AHA And The European Guidelines On Ascending Aorta And Arch Disease

- Guidelines are written and reviewed by experts
- Guidelines are "suggestions" and are meant to be used not only from the experts BUT mainly from the general practitioner and for the surgeons not necessarily in a major aortic center

Circulation

2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease: A Report of the American Heart Association/American College of Cardiology/American Association of Thoracic Surgeons/ Society of Thoracic Surgeons/ European Association of Cardiothoracic Surgeons/ European Society of Cardiology/Canadian Society of Cardiology

29 authors (US)
 9 CT surgeons
 7 cardiologists
 7 vascular surgeons
 1 pt advocate, 1 CV nurse, 1 anesthesiologist, 1 radiologist, 1 geneticist, 1 EM, 1 staff (AHA/ACC)

THE ONLY DOCUMENT TODAY WITH BALANCED MULTIDISCIPLINARY REPRESENTATION

Peer Reviews Are Eligible for CME Credits

Circulation

2022 ACC/AHA guideline for the diagnosis and management of aortic disease

JTCVS 2023

2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease

ACC 2022

EJCTS 2024

CLASS I
 Benefit >>> risk

CLASS IIa
 Benefit > risk

CLASS IIb
 Benefit ≈ risk

CLASS III
 Risk > benefit

Level A
 Multiple populations evaluated

Level B
 Limited populations evaluated

Level C
 Expert opinion only

TEAMWORK

The Journal of Thoracic and Cardiovascular Surgery 2023;166(14):1417-1426. (10.1016/j.jtcvs.2023.07.046) © Hu, E Chen, A DeAnda, L Girardi, K Kim, J Woo, E Tseng, O Preventza

Thank you

preventza@virginia.edu

@OPreventzaMD

November 19-23 2024

MORE SHORT HOT NEW TOPICS RELATED TO AORTIC DISEASE AND ITS TREATMENT

UNIVERSITY OF VIRGINIA