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Are we over-treating AAA? Current Diameter Thresholds are not relevant. Scrutiny of Old Trials and a Metaanalysis of RR

Timothy Resch MD
Nicola Leone MD

Timothy Andrew Resch

Rigshospitalet Heart Centre UNIVERSITY OF COPENHAGEN

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Timothy Andrew Resch

Clinical Practice Guidelines Eur J Vasc Endovasc Surg (2024) 67, 192–331 EVES Open Access

CLINICAL PRACTICE GUIDELINE DOCUMENT

Editor's Choice – European Society for Vascular Surgery (ESVS) 2024 Clinical Practice Guidelines on the Management of Abdominal Aorto-iliac Artery Aneurysms

Recommendation 21 New

Women with an asymptomatic abdominal aortic aneurysm < 50 mm are not recommended for elective repair.

Class	Level	References
III	C	Consensus

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A significant proportion of current endovascular aortic aneurysm repair practice fails to meet Society for Vascular Surgery clinical practice guideline recommended abdominal aortic aneurysm diameter treatment thresholds in the Vascular Quality Initiative

Subhroto T. Saha, MD¹, Bipin D. Sachdev, MD, MS², Philip R. Goodney, MD, MS³, Lyle E. V. M. de Gouveia, MD⁴, Marc L. Schermerhorn, MD⁵, Thomas S. Huber, MD, PhD⁶, Gilbert B. Uppchurch Jr, MD⁷, Dan Neal, MD⁸, Jesse A. Colanillo, MD, MS⁹, Jaswan Kang, MD¹⁰, Richard D. Powell, MD¹¹, and Daniel H. Stone, MD¹², Gainesville, Fla, Lebanon, NH, and Boston, Mass

J Vasc Surg 2022; ■ 1-8.

- 80% EVAR in US
- 38% Outside CGL !
- 22% in pts < 1year life expectancy

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Why We need to Re-examine the indication for AAA Repair

- Measuring Methodology
- Rupture risk

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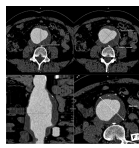
Not All Diameters Are the Same!!

What Diameter Are We Treating?

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Abdominal aortic aneurysm diameter:
A comparison of ultrasound measurements with those from standard and three-dimensional computed tomography reconstruction

Brian J. Manning, MD, FRCSEd, Thorarinn Kristmundsson, MD, Björn Sönesson, MD, PhD, and Timothy Resch, MD, PhD, *Malmö, Sweden* | *J Vasc Surg* 2009;50:263-8.



US Diameter Is Smaller than CT diameter

The U.S. Progress

Patient (aged 60-76 years) with an asymptomatic infrarenal aneurysm

A-P ultrasound diameter

3.0-3.9 cm 4.0-5.5 cm >5.5 cm

Could patient be fit for surgery?

If no ← Observation
If yes, randomise → Surgery

Observation → Enlargement or development of symptoms → Surgery

Surg 9, 42-48 (1998)

The New England Journal of Medicine

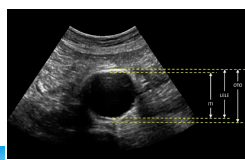
Imaging

CT measurements were used to determine the diameter of the aneurysm for the purpose of randomization or for assessment of the need for elective repair in patients in the surveillance group. Ultrasonography was used for most follow-up imaging in patients in the surveillance group so that exposure to radiation would be minimized. Once the diameter of an aneurysm had been measured as 5.3 cm or greater, CT was used for subsequent follow-up imaging. We also attempted to obtain CT scans for all surviving patients at the end of the study.

Clinical Practice Guidelines | *Eur J Vasc Endovasc Surg* (2024) 67, 192-331

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Recommendation 8 (Changed)

The anteroposterior plane with consistent calliper placement should be considered the preferred method for ultrasound abdominal aortic diameter measurement.

Class	Level	References	ToU
Ia	B	Bisacco et al. (2023), Long et al. (2012) ^{1,11} , Grocada et al. (2012) ¹⁴	

SOCIETY FOR VASCULAR SURGERY® DOCUMENT

The Society for Vascular Surgery practice guidelines on the care of patients with an abdominal aortic aneurysm

inner wall.¹⁹¹ Diameter measurements based on orthogonal rendering as well as path lengths and centerline measurements have been largely superseded by the adoption of three dimensional reformatting software and dedicated computer workstations to obtain curved multiplanar reformatted images.¹⁹²

Things We Know We know

	Ultrasound	CT- centerline
ESVS GL	55	62
SVS GL	48	55
UK –SAT	55	62
ADAM	48	55

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How High Is Actually the RR??

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RCT Foundation On Rupture Risk

The U.K. Small Aneurysm Trial: Design, Methods and Progress
The UK Small Aneurysm Trial Participants
doi:10.1093/eurheartj/ehg019

The New England Journal of Medicine
IMMEDIATE REPAIR COMPARED WITH SURVEILLANCE OF SMALL ABDOMINAL AORTIC ANEURYSMS

- Darling 1971 (n=83, autopsy, 18% <5cm.)
- Nevitt et al 1989 (n=370, cum RR @ 5y 0% <5cm, 25% > 5cm)
- Glimåker (retrospective, n=187; 0% rAAA <5cm, cumulative RR 2.5% @7y FU)

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Safety of Men With Small and Medium Abdominal Aortic Aneurysms Under Surveillance in the NAAASP

Size	Rupture Risky
3-4 cm	0.03%
4.5-5.4 cm	0.28%
5.0-5.4 cm	0.40%

(N=18 652)

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Current Rupture Rates?

Rupture rates of untreated large abdominal aortic aneurysms in patients unfit for elective repair

Annual Rupture Rate	36 months
5.0 to 5.4 cm (women)	3.4% (95% CI 2.1-5.1)
5.5-6 cm	2.2% (207 at risk ^a)
6.1-7 cm	6.0% (349 at risk ^a)
>7.0 cm	18.4% (109 at risk ^a)
>7.0 cm	17 at risk ^b

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Systematic Review and Meta-Analysis of the Incidence of Rupture, Repair, and Death of Small and Large Abdominal Aortic Aneurysms under Surveillance

Size	n	Events	Estimate	95% CI
55-60 mm	74	41.9	56.3%	53.9-58.7
61-70 mm	57	43.9	77.0%	74.6-79.4
>70 mm	14	23	164.3%	123.2-205.4

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Optimal AAA repair size threshold

Men

Average health

Poor health

Age: 60 Years, 70 Years, 80 Years

AAA size in cm: 4, 5, 6, 7, 8

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This study in conjunction with a lack of level 1 evidence to substantiate the optimal size threshold for AAA surgical repair highlights the potential need for a randomized trial or additional analyses leveraging the power of large datasets to further inform aneurysm care delivery.

RESEARCH

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Summary - Conclusions

- Current RCT are based on old data
 - **Rupture Risk Likely Exaggerated**
- Real world Indication currently mostly based on CT diameter
 - **Actual Aortic Diameter Exaggerated**
- **Have we become over-generous with EVAR?**

NEW TRIALS ARE IN PROGRESS!

ScandAAAs Trial

WARRIORS randomised trial aims to examine early EVAR in women

WARRIORS trial