Internal diameter must be the new rule!

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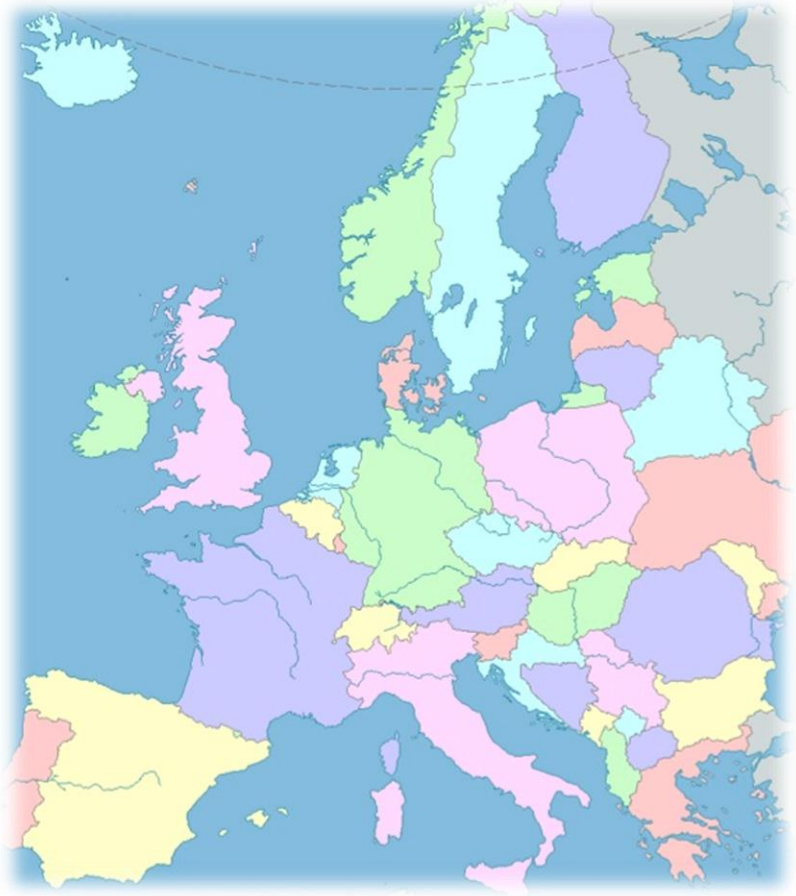
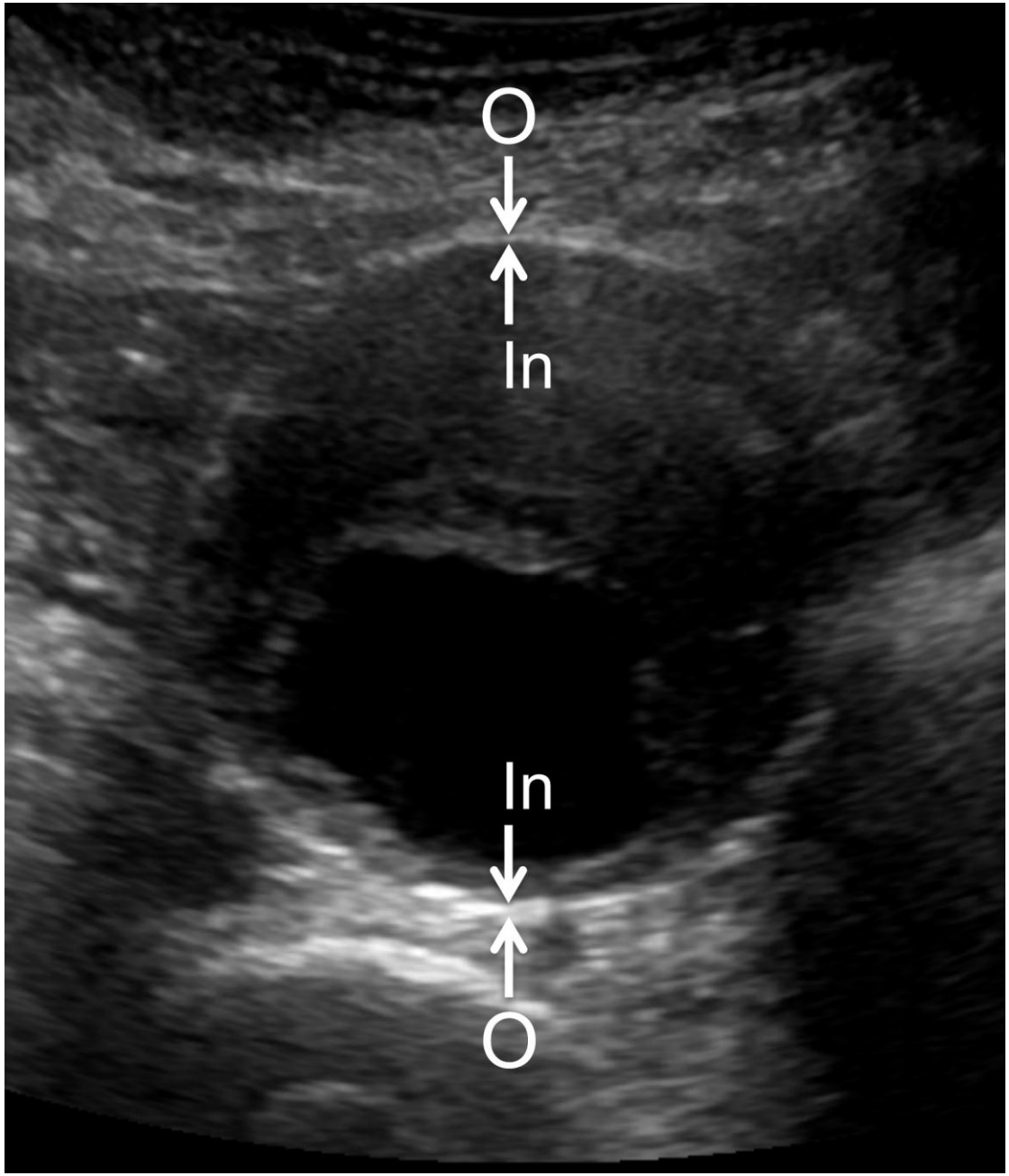


AAA Screening Programmes?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Measurement variability?

Beales L, Wolstenhulme S, Evans JA, West R, Scott DJ. Reproducibility of ultrasound measurement of the abdominal aorta. *Br J Surg* 2011; 98(11):1517-25

Long A, Rouet L, Lindholt JS, Allaire E. Measuring the maximum diameter of native aortic aneurysms: Review and critical analysis. *Eur J Vasc Endovasc* 2012 May;43(5):515-24

Conclusion:

<u>The studies used different methodologies with no standardized measurement techniques.</u> Measurements were taken by observers from different medical disciplines of varying grade and levels of training.

- Standardised measurement technique required
- Easily taught
- Accurate and reproducible

Why ITI?

Point 1

BMJ

RESEARCH

Screening men for abdominal aortic aneurysm: 10 year mortality and cost effectiveness results from the randomised Multicentre Aneurysm Screening Study

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ABSTRACT

Objectives To assess whether the mortality benefit from screening men aged 65-74 for abdominal aortic aneurysm decreases over time, and to estimate the long term cost effectiveness of screening.

Design Randomised trial with 10 years of follow-up.

Setting Four centres in the UK. Screening and surveillance was delivered mainly in primary care settings, with follow-up and surgery offered in hospitals.

Participants Population based sample of 67 770 men aged 65-74.

Interventions Participants were individually allocated to invitation to ultrasound screening (invited group) or to a control group not offered screening. Patients with an

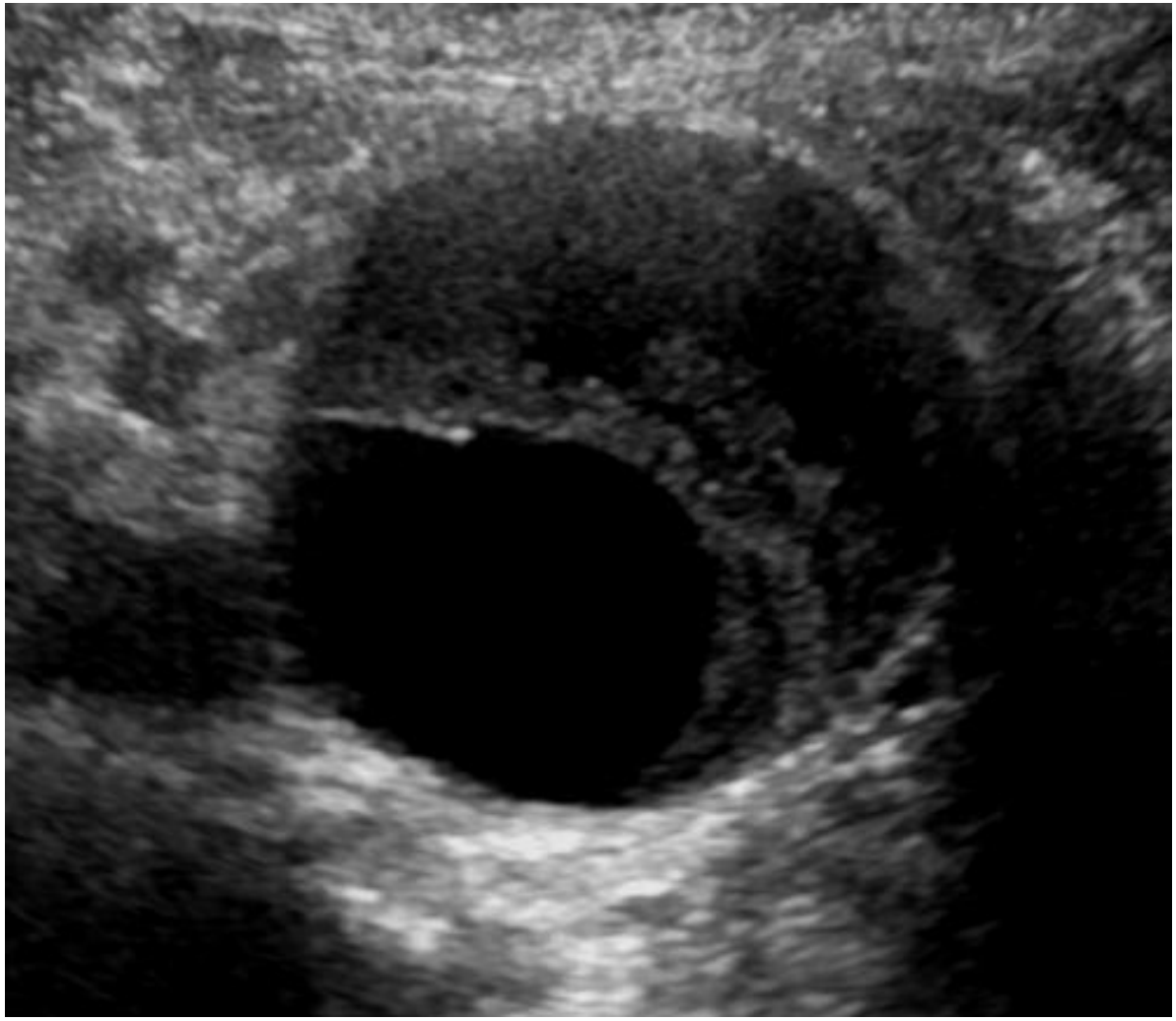
Trial registration Current Controlled Trials ISRCTN37381646.

INTRODUCTION

National screening programmes for abdominal aortic aneurysm in men have recently been introduced in England and Scotland[1,2] and in the United States as part of Medicare.[3] The United Kingdom Multicentre Aneurysm Screening Study (MASS)[4,5] has provided most of the worldwide randomised evidence for the mortality benefit after ultrasound screening for abdominal aortic aneurysm.[6,7] The UK screening programme for men aged 65 is based closely on the proto-

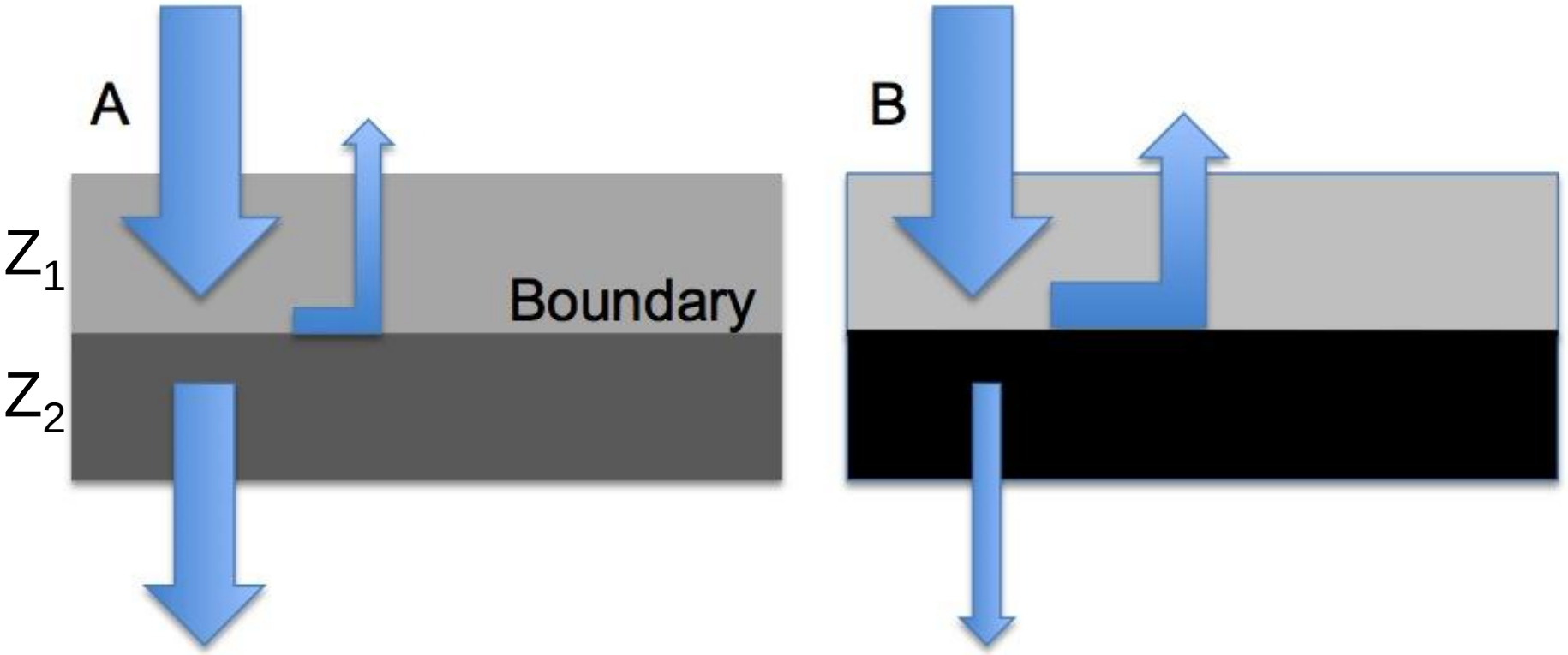
Point 2

Point 3 What is this?

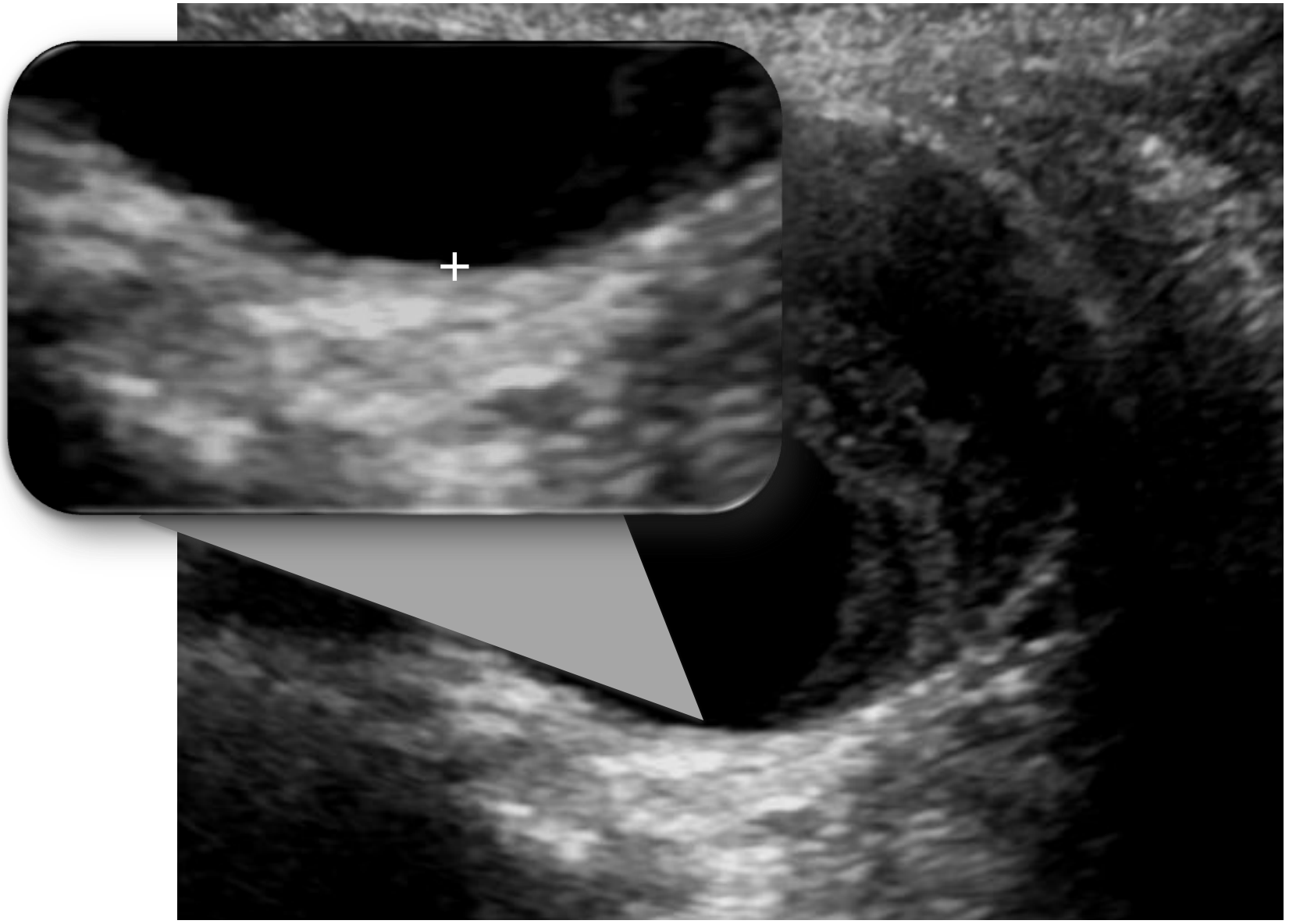


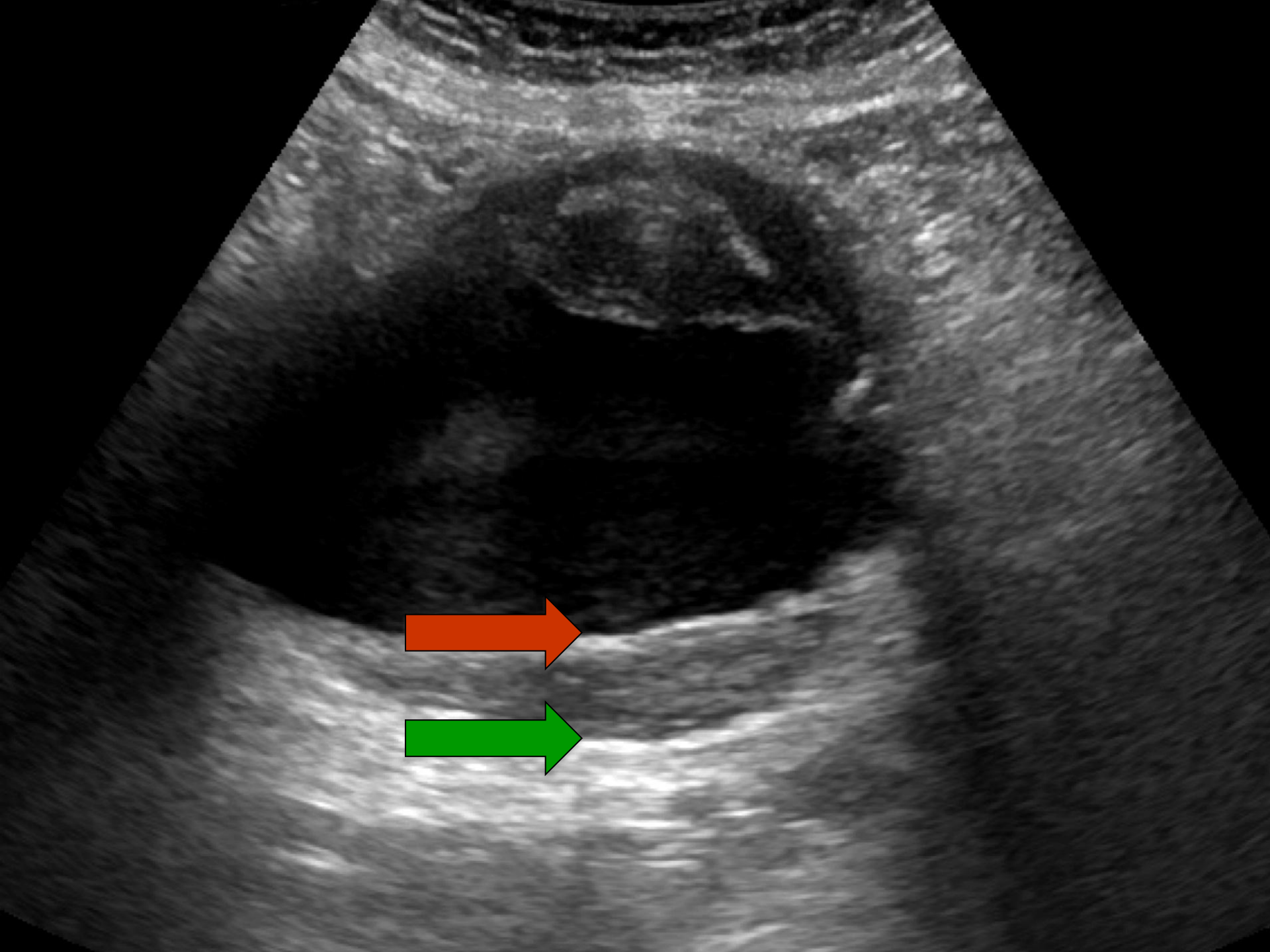
Representation of ultrasound scattering and reflection due to variations in acoustic impedance or resistance in tissue

Ultrasound reflection at tissue boundaries



$$\text{Intensity of reflection} = \frac{(Z_1 - Z_2)^2}{(Z_1 + Z_2)^2}$$





Evidence for ITI?

Beales L, Wolstenhulme S, Evans JA, West R, Scott DJ. Reproducibility of ultrasound measurement of the abdominal aorta. *Br J Surg* 2011; 98(11):1517-25

The most favourable reproducibility coefficient/limits of agreement were obtained with the calliper endpoints placed in an ITI poistion

Do we have evidence of less variation with ITI?

Inter-observer variability for ITI and OTO

(95% threshold limit for differences between technicians)

Method	Inter-observer standard deviations	Reproducibility coefficients
ITI	0.11cm	0.30cm (CI:0.24-0.36)
OTO	0.15cm	0.42cm (CI:0.35-0.49)

This indicates significantly better repeatability using ITI;*($p<0.05$)*

Hartshorne TC, McCollum CN, Earnshaw JJ, Moriris J, Nasim A. Ultrasound Measurement of Aortic Diameter in a National Screening Programme. *Eur J Vasc Endovasc Surg* 2011;42(2):195-9

The key question

ITI versus OTO and intervention

Screening programmes including NAAASP will gather large amounts of data on the natural history of aortic aneurysms, providing information and evidence that may lead to modification and improvement of the present schedules.

To conclude

On the basis better reproducibility, ITI measurements should be used in AAA screening programmes. The diameter thresholds for surveillance and intervention can be adjusted if and when there is clear evidence to support this.