

Debate: surveillance is a waste of time and resource (Against)

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Key issues in post-EVAR surveillance

- Cost
 - Direct & resource use
- Effectiveness
 - Clinical & cost
- Delivery
 - Compliance, Access, Acceptability, Patient Education
- Modality
 - Time, Cost, Risk to patient, Diagnostic accuracy
- Interval presentations
- Opponent





[Duplex ultrasound and contrast-enhanced ultrasound versus computed tomography for the detection of endoleak after EVAR: systematic review and bivariate meta-analysis.](#)

Mirza TA, Karthikesalingam A, Jackson D, Walsh SR, Holt PJ, Hayes PD, Boyle JR.

Eur J Vasc Endovasc Surg. 2010 Apr;39(4):418-28. doi: 10.1016/j.ejvs.2010.01.001. Epub 2010 Feb 1. Review.

PMID: 20122853 **Free Article**

[Systematic review and meta-analysis of duplex ultrasonography, contrast-enhanced ultrasonography or computed tomography for **surveillance** after endovascular **aneurysm** repair.](#)

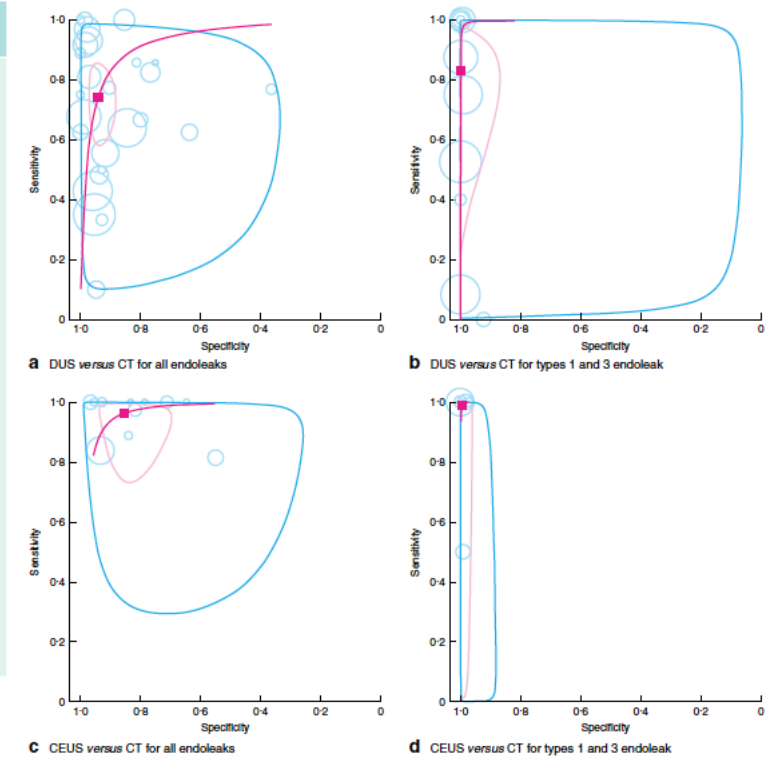
Karthikesalingam A, Al-Jundi W, Jackson D, Boyle JR, Beard JD, Holt PJ, Thompson MM.

Br J Surg. 2012 Nov;99(11):1514-23. doi: 10.1002/bjs.8873. Epub 2012 Sep 21. Review.

PMID: 23001681



Reference	Paired scans	CT+ DUS+	CT+ DUS-	CT- DUS+	CT- DUS-	CT+ CEUS+	CT+ CEUS-	CT- CEUS+	CT- CEUS-
Heilberger et al. ⁴⁶ (1997)	34	8	1	0	25	8	1	4	21
Sato et al. ⁵⁷ (1998)	117	33	7	18	59	-	-	-	-
Thompson et al. ⁵⁹ (1998)	20	4	0	0	16	-	-	-	-
Wolf et al. ⁶⁰ (2000)	166	51	12	3	100	-	-	-	-
Zannetti et al. ⁶¹ (2000)	198	11	1	3	183	-	-	-	-
d'Audiffret et al. ⁴² (2001)	211	31	1	4	175	-	-	-	-
Pages et al. ⁵³ (2001)	109	14	15	5	75	-	-	-	-
Greenfield et al. ⁴⁵ (2002)	11	6	1	1	3	-	-	-	-
Gotzarian et al. ⁴⁴ (2002)	53	17	5	3	25	-	-	-	-
McLafferty et al. ⁴⁹ (2002)	76	7	0	1	68	-	-	-	-
McWilliams et al. ⁵⁰ (2002)	96	2	18	4	72	-	-	-	-
Parent et al. ⁵⁴ (2002)	141	18	0	18	105	-	-	-	-
Bendick et al. ³⁹ (2003)	20	6	2	0	12	8	0	2	10
Giannoni et al. ⁴³ (2003)	81	5	3	0	73	8	0	21	52
Raman et al. ⁵⁵ (2003)	494	21	28	18	427	-	-	-	-
AbuRahma et al. ³⁸ (2005)	367	23	11	4	329	-	-	-	-
Ashoke et al. ¹⁴ CXH (2005)	66	4	2	12	48	-	-	-	-
Ashoke et al. ¹⁴ STGH (2005)	23	6	1	3	13	-	-	-	-
Sandford et al. ⁵⁶ (2006)	244	15	12	18	199	-	-	-	-
Henao et al. ⁴⁷ (2006)	20	3	3	1	13	6	0	3	11
Nerlekar et al. ⁵² (2006)	233	27	2	6	208	-	-	-	-
Collins et al. ⁴¹ (2007)	35	10	3	14	8	-	-	-	-
Clevert et al. ⁴⁰ (2008)	43	5	10	2	26	15	0	2	26
Iezzi et al. ⁴⁸ (2009)	84	25	15	16	28	39	1	8	36
Nagre et al. ⁵¹ (2011)	561	54	100	19	388	-	-	-	-
Schmieder et al. ⁵⁸ (2009)	472	48	27	62	335	-	-	-	-
McWilliams et al. ⁶² (1999)	20	-	-	-	-	3	0	6	11
Giannoni et al. ¹⁹ (2007)	29	-	-	-	-	7	0	1	21
Ten Bosch et al. ²⁴ (2010)	127	-	-	-	-	22	5	45	55
Cantisani et al. ²³ (2011)	108	-	-	-	-	20	0	3	85
Pertini et al. ²⁵ (2011)	395	-	-	-	-	83	16	20	276



“Surveillance remains mandatory post-EVAR

CEUS would have greater cost implications than DUS...

CEUS therefore cannot be recommended...

DUS performs equivalently to CT with 30% cost reduction, no nephrotoxicity and no radiation”



Cost-effectiveness analysis of endovascular versus open surgical repair of aneurysms based on worldwide experience.

Hayes PD¹, Sadat U, Walsh SR, Noorani A, Tang TY, Bowden DJ, Gillard JH, Boyle JR.

CONCLUSION: While the UK's National Institute for Clinical Excellence does not set an absolute limit at which treatments would not be funded, pound30,000 (\$45,000) is generally regarded as the upper limit of acceptability. At this level, there is almost a 100% probability that EVAR is a cost-effective treatment

Br J Surg. 2014 Feb;101(3):225-31. doi: 10.1002/bjs.9409.

Mid-term cost-effectiveness analysis of open and endovascular repair for ruptured abdominal aortic aneurysm.

Rollins KE¹, Shak J, Ambler GK, Tang TY, Hayes PD, Boyle JR.

CONCLUSION: There was no significant difference in reintervention rates after EVAR or open repair for rAAA. EVAR was as cost-effective at mid-term follow-up. The increased procedural costs of open repair are not outweighed by greater surveillance and reintervention costs after EVAR.

“...a 100% probability that EVAR is a cost-effective treatment”

“The increased procedural costs of open repair are NOT outweighed by greater surveillance & reintervention costs after EVAR”



NICE National Institute for Health **POORLY INFORMED DECISIONS, CARE RATIONING AND SUPPORTING OVERT BIAS**

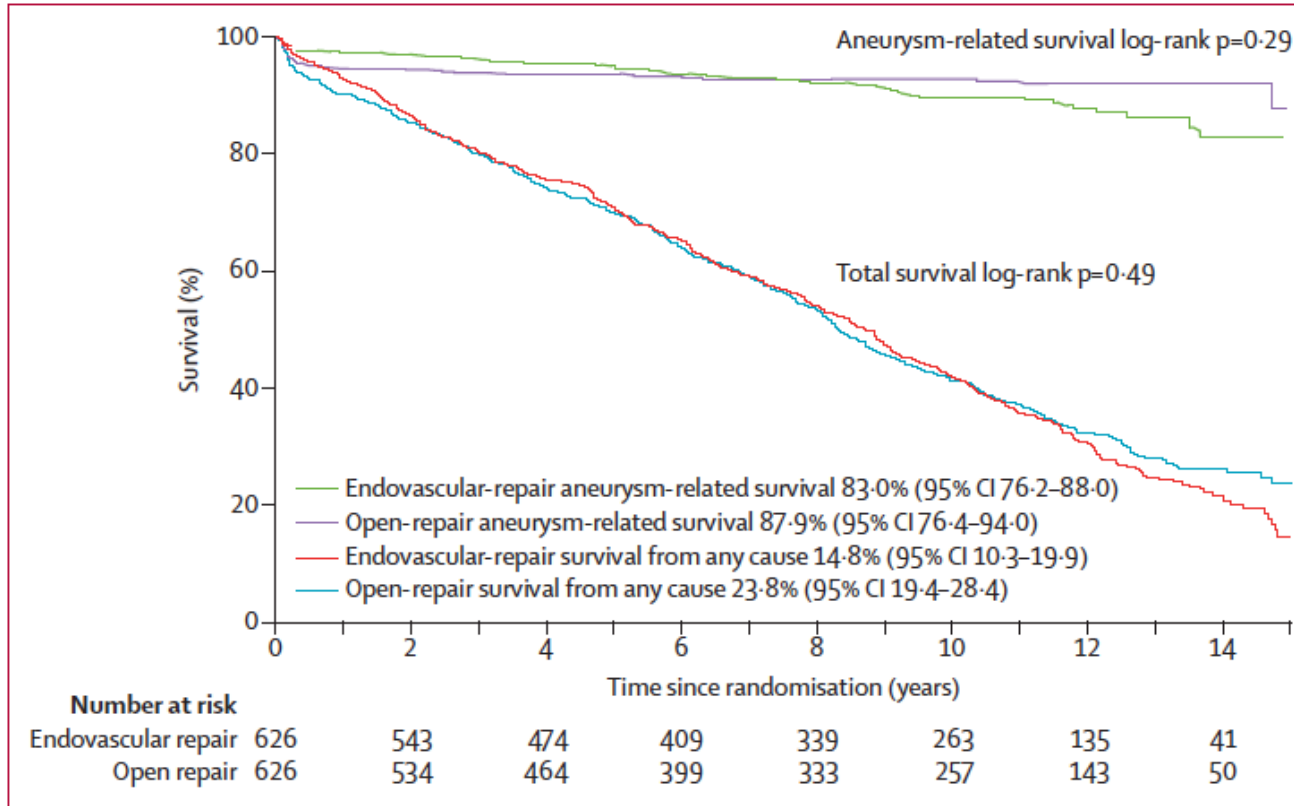
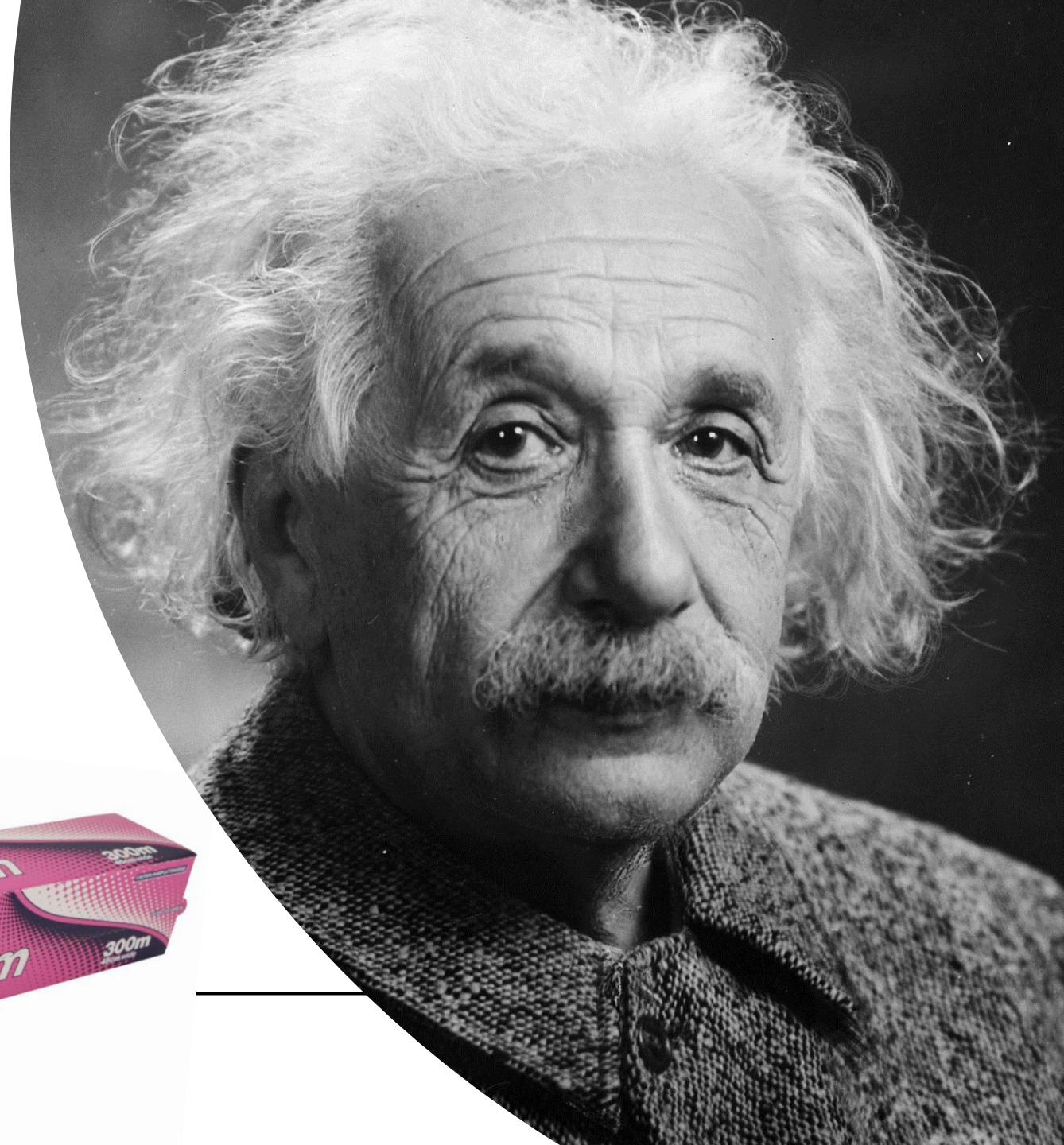


Figure 2: Kaplan-Meier estimates for total survival and aneurysm-related survival up to 15 years of follow-up
 The hazard ratio is 1.05 (95% CI 0.92–1.19) for total mortality, and is 1.24 (0.84–1.83) for aneurysm-related mortality.

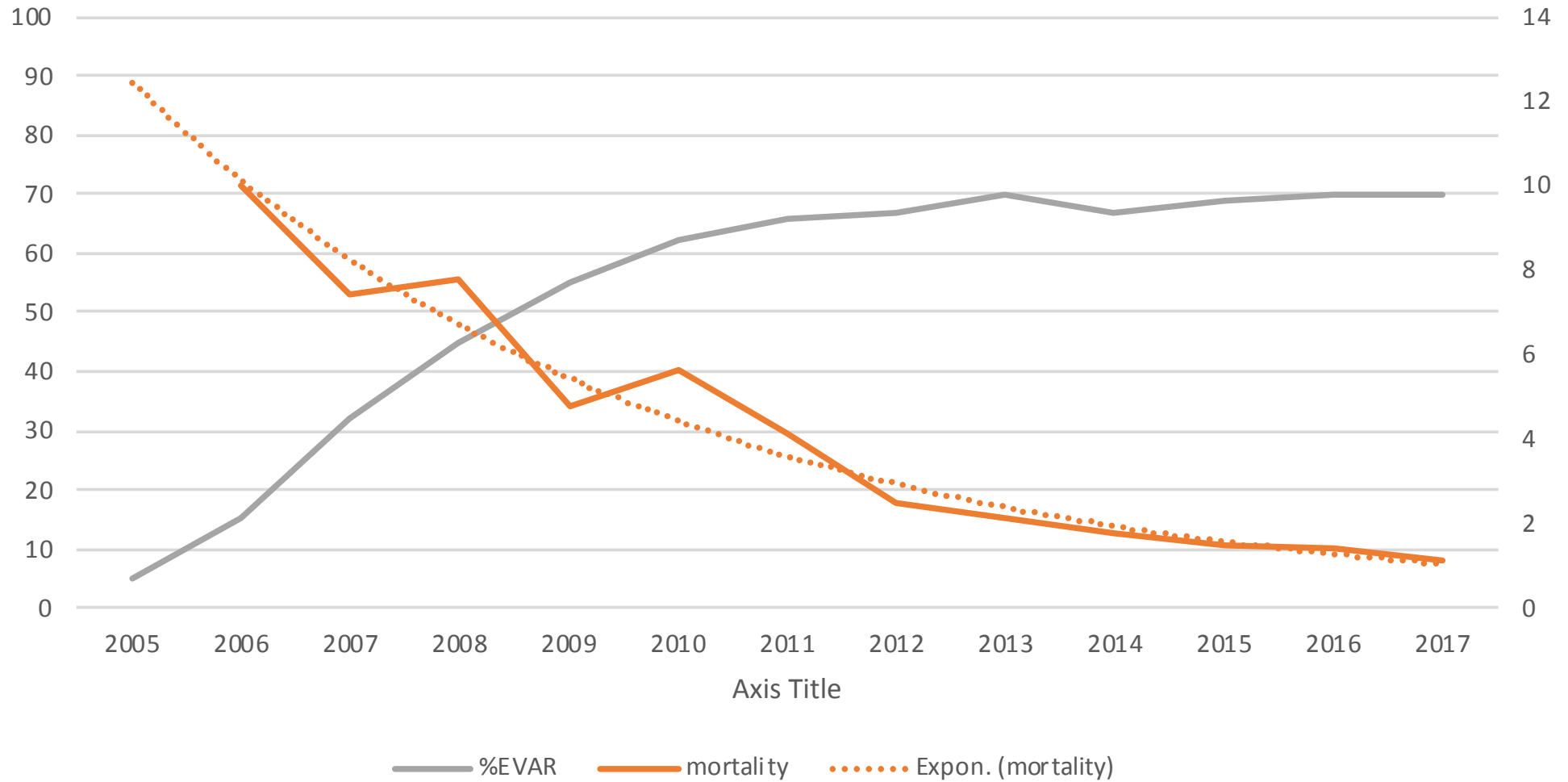
NON-CREDIBLE

NICE

- Born 1879, Ulm, Germany
- 1948 – admitted with abdominal pain
- “Grapefruit-sized” aortic aneurysm
- Wrapped anteriorly in cellophane
- 12 April 1955 – readmitted with pain
- Died 0115, April 18, 1955 (aged 76)



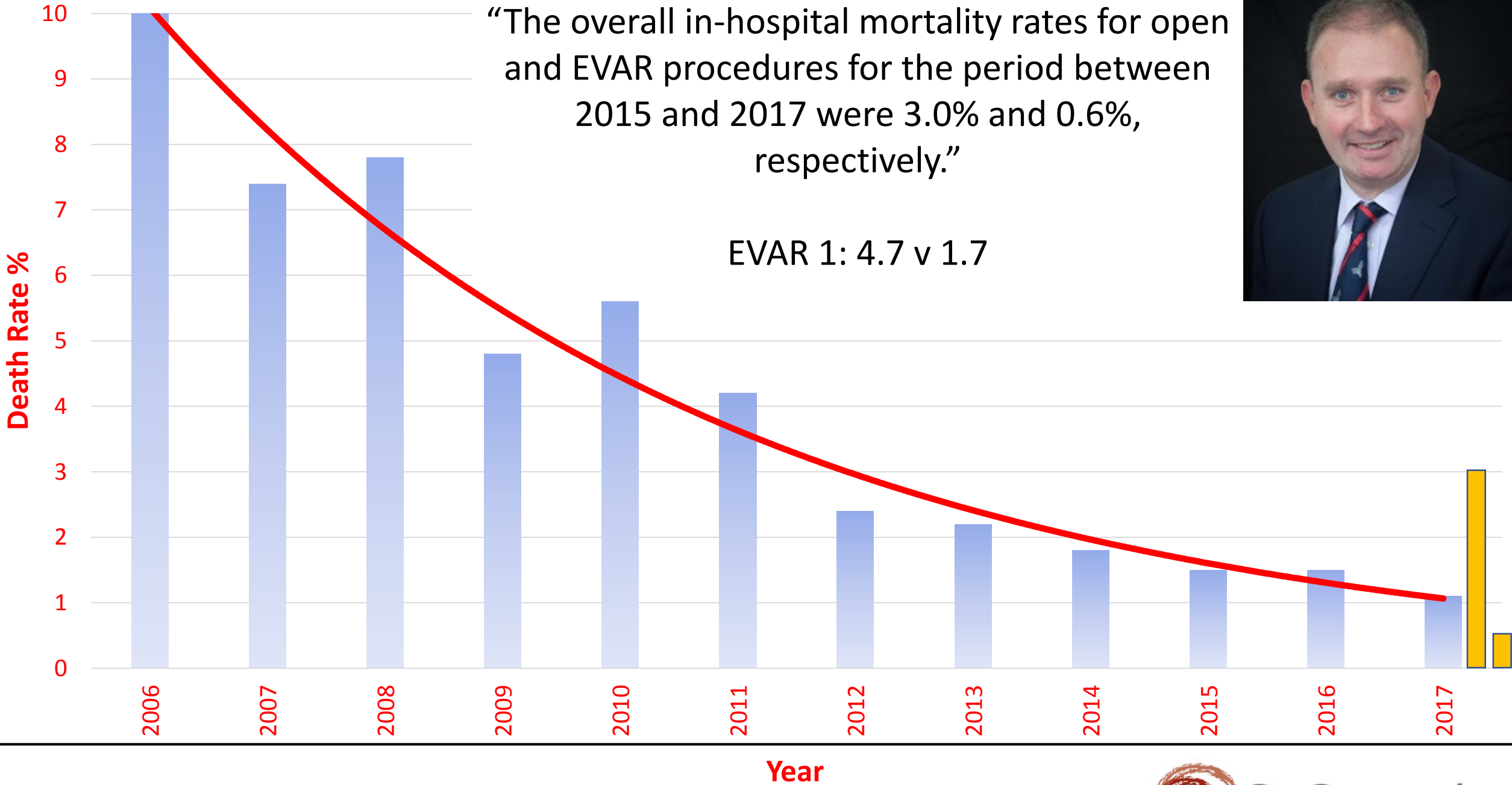
Mortality and rate of EVAR in the UK 2005-2018





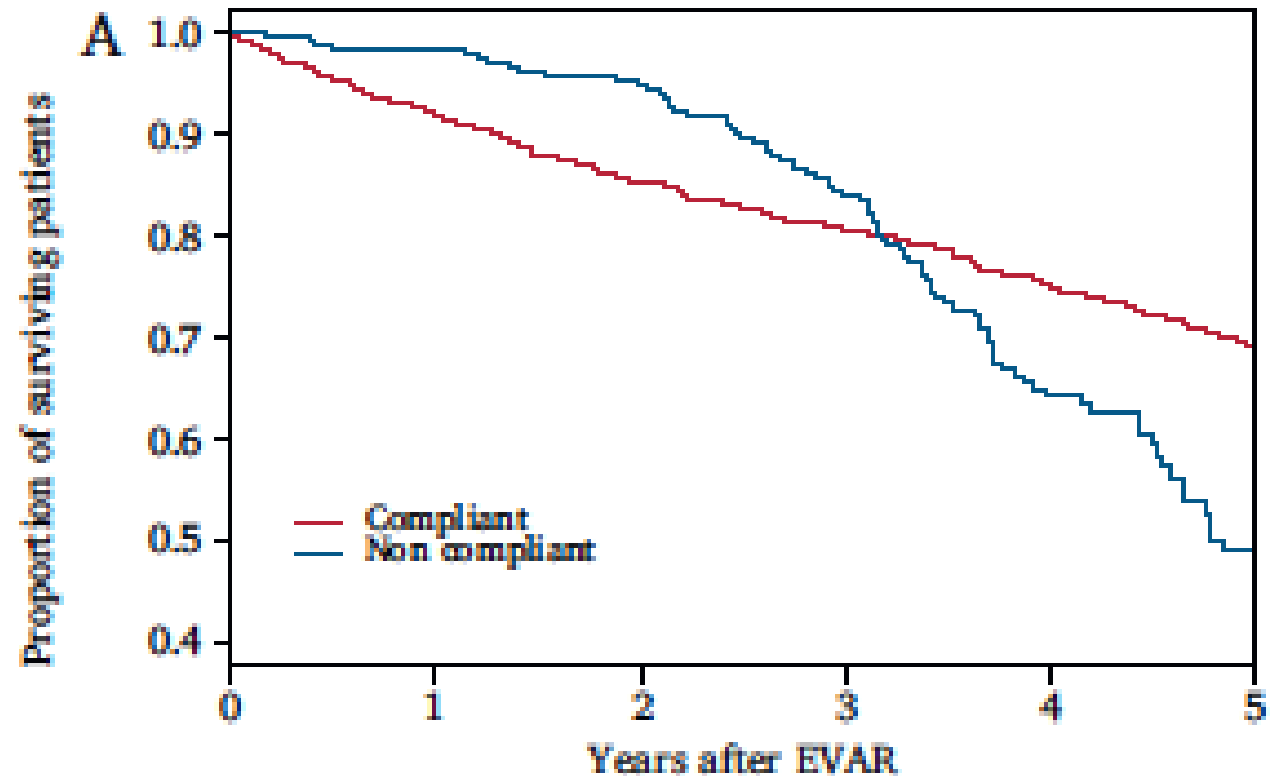
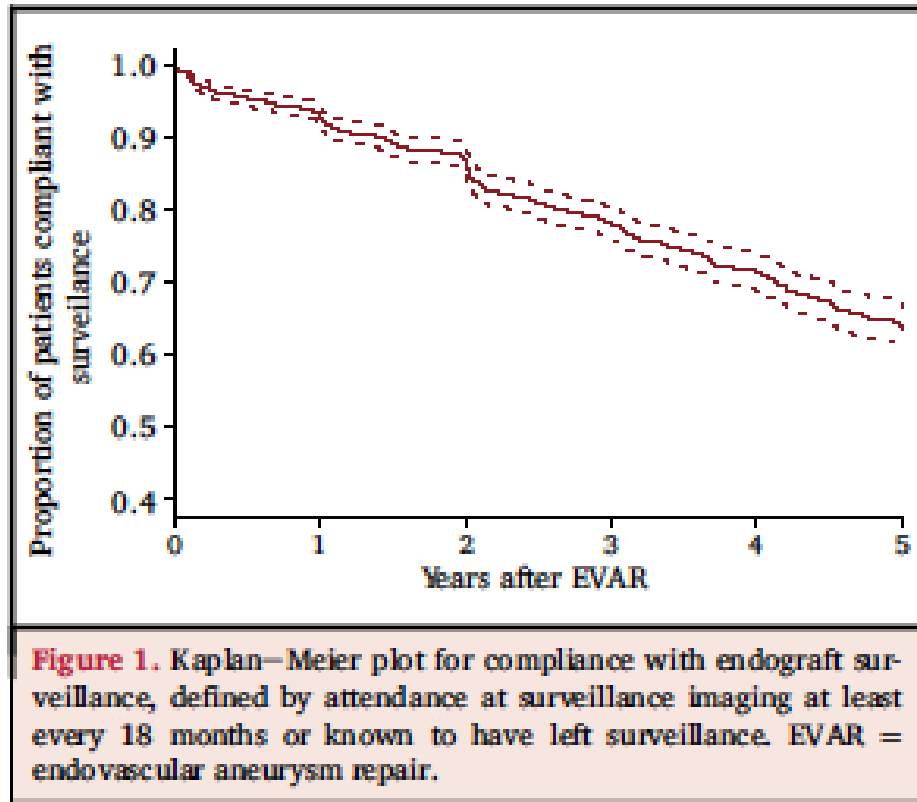
“The overall in-hospital mortality rates for open and EVAR procedures for the period between 2015 and 2017 were 3.0% and 0.6%, respectively.”

EVAR 1: 4.7 v 1.7



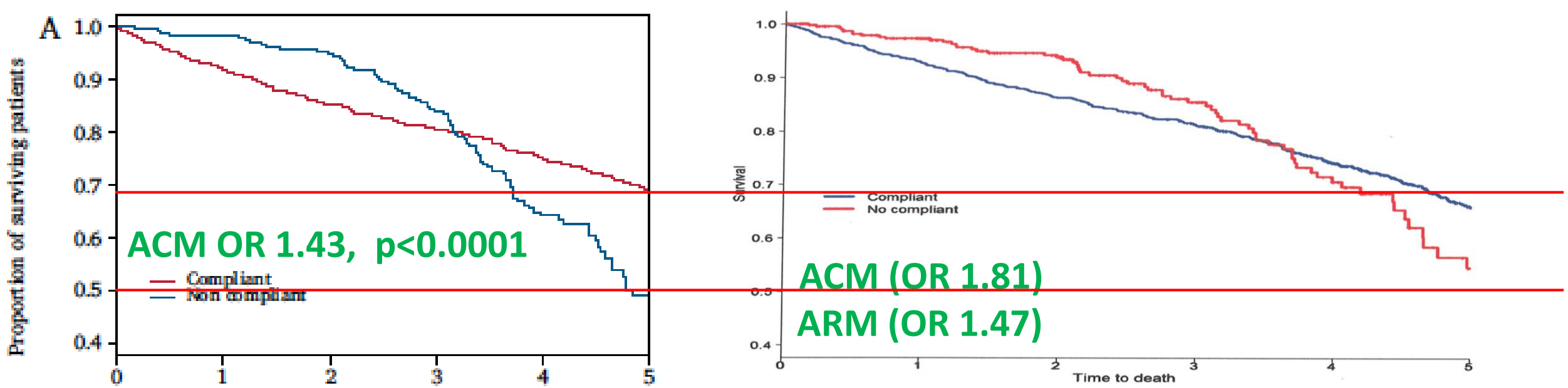
Multicentre Post-EVAR Surveillance Evaluation Study (EVAR-SCREEN)

Matthew J. Grima ^{a,b,*}, Alan Karthikesalingam ^a, Peter J. Holt ^a, for the EVAR-SCREEN Collaborators



ACM OR 1.43, $p < 0.0001$

Failure of surveillance results in higher overall mortality and emphasises the importance of routine surveillance.



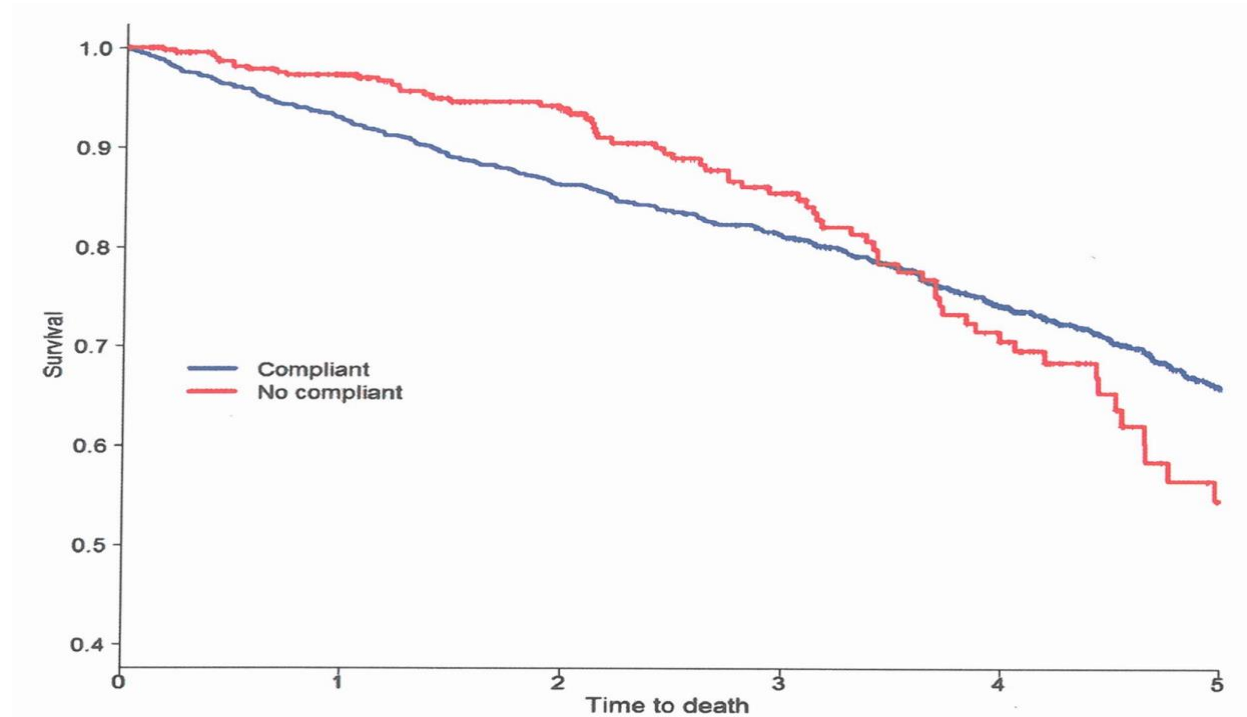
EVAR 1 Trial

<1:10 surviving patients in surveillance at 8 years

- Endovascular-repair aneurysm-related survival 83.0% (95% CI 76.2–88.0)
- Open-repair aneurysm-related survival 87.9% (95% CI 76.4–94.0)
- Endovascular-repair survival from any cause 14.8% (95% CI 10.3–19.9)
- Open-repair survival from any cause 23.8% (95% CI 19.4–28.4)

Figure 2: Kaplan-Meier estimates for total survival and aneurysm-related survival up to 15 years of follow-up
The hazard ratio is 1.05 (95% CI 0.92–1.19) for total mortality, and is 1.24 (0.84–1.83) for aneurysm-related mortality.

EVAR SCREEN v. EVAR 1: Its not just about the op

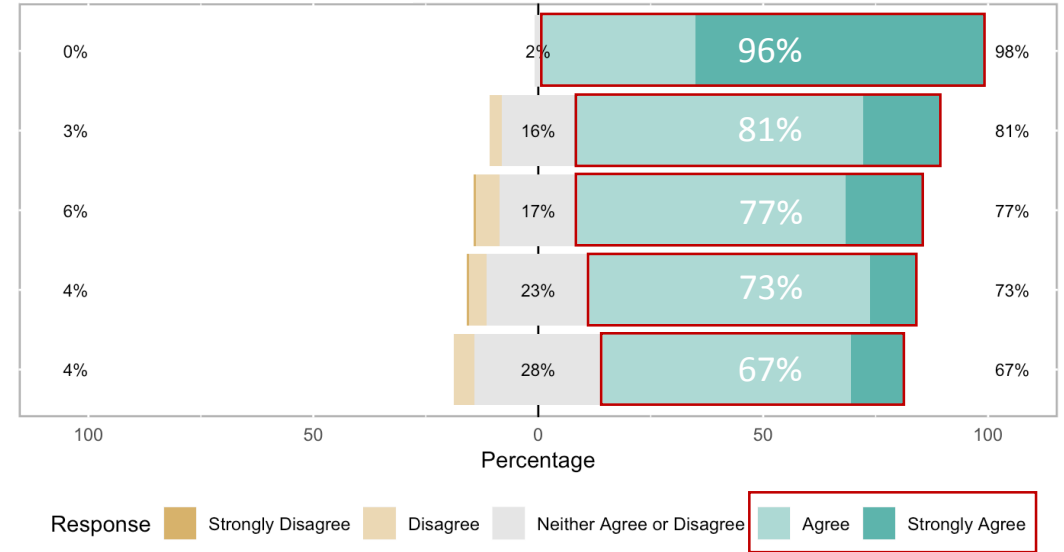


Post-EVAR Patient Preference Study

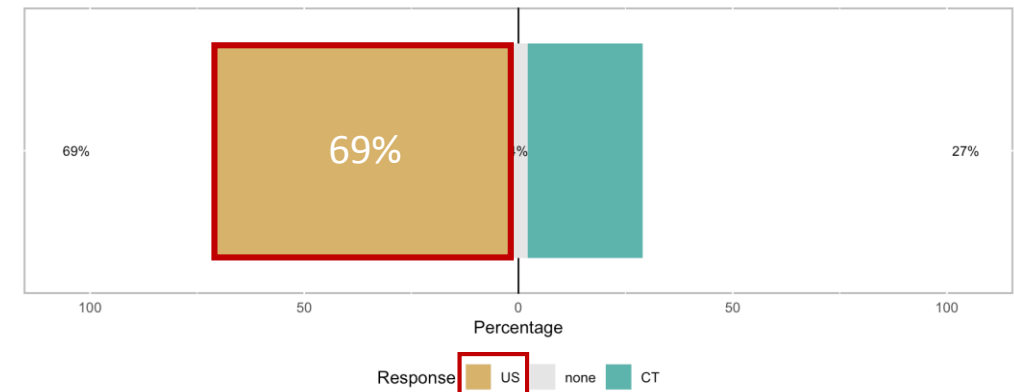
- Surveillance is necessary
- High risk, more scans
- Pre-operative risk
- Low risk, less scans
- Personalised schedule based on risk

- Ultrasound vs CT

Attitude and Views to Risk



Modality Preference



Surveillance can be improved but saves lives

- **Improve surveillance programmes**
 - Define optimal intervals
 - Risk-based, dynamic & personalised surveillance
 - Delivery close to home
 - Reliable, safe, non-toxic, non-carcinogenic
- **Investigate and rectify problems early**
 - Sac size increase is pathological
 - I/III Endoleaks are clinical urgencies



