



23RD INTERNATIONAL EXPERTS SYMPOSIUM
CRITICAL ISSUES in aortic endografting 2019
MAY 23-24

HILTON LIVERPOOL CITY CENTRE UNITED KINGDOM



Debate: Surveillance is a waste of time and resource

Mr Jonathan Boyle

Cambridge University Hospitals



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- No Disclosures

Professor Peter Holt



- Highly respected Researcher and Vascular Surgeon
- NIHR Clinician Scientist
- NIHR and HTA grants
- Numerous high impact publications
- Research interest in EVAR surveillance

Spare Time



EVAR-SCREEN

Eur J Vasc Endovasc Surg (2019) 57, 521–526

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

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

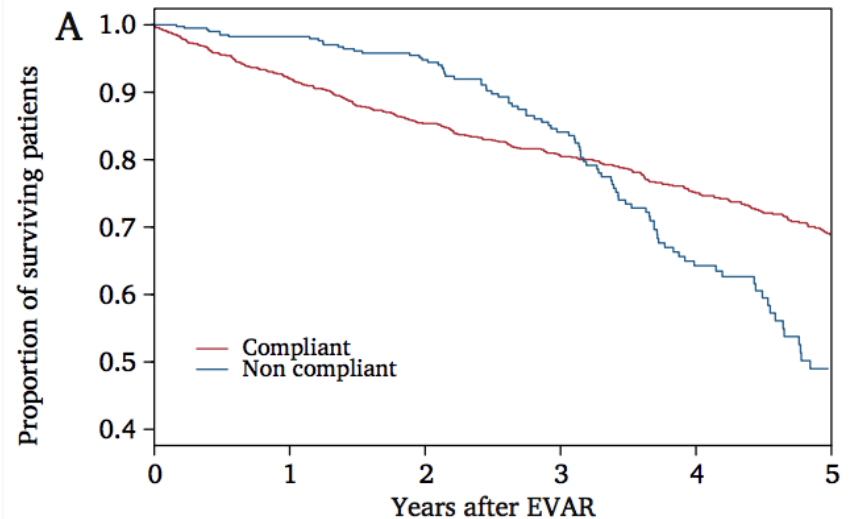
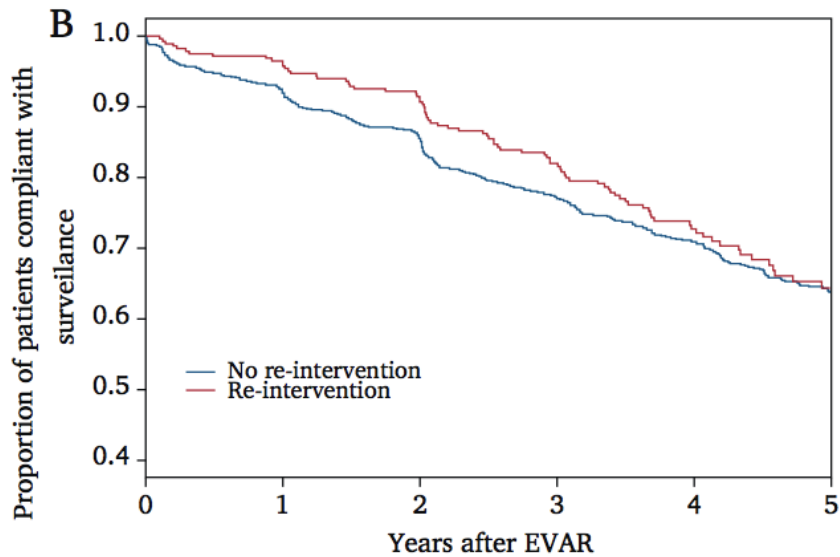
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WHAT THIS PAPER ADDS

Concern has been raised regarding the durability of endovascular aneurysm repair (EVAR) and lifelong surveillance is therefore considered mandatory. The National Institute for Health and Care Excellence and National Institute for Health Research Health Technology Appraisals have deemed EVAR surveillance a national priority for research, but a number of single centre reports are emerging to suggest that patient compliance with EVAR surveillance programmes is poor. There are no nationally representative or multicentre data to describe this phenomenon, or its impact on patient outcome, in the UK. The study showed that a substantial proportion of patients were non-compliant with surveillance after EVAR in the UK. Furthermore, considerable variation in compliance rates between the vascular centres prompts the need for further studies to analyse this phenomenon.

A third of patients non-compliant with surveillance



Failed Surveillance

Table 3. Endograft complications directing re-intervention in compliant and non-compliant patients

Rationale for re-intervention	No. of all re-interventions in compliant patients (n = 251)	No. of all re-interventions in non-compliant patients (n = 94)
Type 1 endoleak	42	16
Type 2 endoleak	108	53
Type 3 endoleak	8	2
Sac expansion unknown cause	4	2
Aneurysm rupture	8	1
Device migration	4	4
Limb kink or stenosis	39	7
Limb occlusion	31	9
Other	7	0

In total, 204 compliant patients (21%) had 251 complications. Eighty-six non-compliant patients (19%) had 94 complications.

- “Majority of significant endograft complications developed in the interval between apparently normal surveillance scans”
- “Majority of re-interventions were prompted by the onset of symptoms between scans”

Meeting Surveillance Guidelines



CrossMark

From the Society for Clinical Vascular Surgery

Adherence to postoperative surveillance guidelines after endovascular aortic aneurysm repair among Medicare beneficiaries

Trit Garg, BA,^a Laurence C. Baker, PhD,^{b,c} and Matthew W. Mell, MD, MS,^a *Stanford, Calif; and Cambridge, Mass*

<i>Variables</i>	<i>Complete (n = 4169)</i>	<i>Incomplete (n = 5526)</i>	<i>P value</i>
Age at repair, mean ± SD, years	76.4 ± 6.32	76.2 ± 6.25	.10
Sex, %			.16
Male	43.3	56.7	
Female	41.4	58.6	
Race, %			.09
White	42.8	57.2	
Black	48.8	51.2	
Other	42.2	57.8	
Medicaid eligible, %			.37
Yes	41.6	58.4	
No	43.2	56.9	

Re-intervention after EVAR

Original article

Risk of reintervention after endovascular aortic aneurysm repair

A. Karthikesalingam, P. J. E. Holt, R. J. Hinchliffe, I. M. Nordon, I. M. Loftus and M. M. Thompson

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Symptoms

- “Most patients requiring re-intervention presented symptomatically”
- 59% presented with new symptoms

	Asymptomatic presentation	Symptomatic presentation	All reinterventions
Endoleak type Ia (proximal)	8 (12)	7 (10)	15 (22)
Endoleak type Ib (distal)	5 (7)	2 (3)	7 (10)
Endoleak type II	2 (3)	0 (0)	2 (3)
Endoleak type III	5 (7)	2 (3)	7 (10)
Kinking	2 (3)	10 (14)	12 (17)
Stenosis	1 (1)	9 (13)	10 (14)
Occluded graft limb	1 (1)	5 (7)	6 (9)
Migration	3 (4)	2 (3)	5 (7)
Sac expansion > 5 mm or > 5%	1 (1)	0 (0)	1 (1)
Rupture	0 (0)	2 (3)	2 (3)
Impingement	0 (0)	1 (1)	1 (1)
Graft occlusion	0 (0)	1 (1)	1 (1)
Total	28 (41)	41 (59)	69 (100)

Secondary Intervention

- Meta-analysis of 18,000 patients
- “> 90% of EVAR cases received no benefits from surveillance scans”
- “ low risk patients should be discharged having completed a brief uncomplicated follow-up”

Eur J Vasc Endovasc Surg (2010) 39, 547–554



REVIEW

Secondary Interventions Following Endovascular Aneurysm Repair (EVAR) and the Enduring Value of Graft Surveillance

I.M. Nordon*, A. Karthikesalingam, R.J. Hinchliffe, P.J. Holt, J.M. Loftus, M.M. Thompson

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Long-term outcomes of EVAR

HEALTH TECHNOLOGY ASSESSMENT

VOLUME 22 ISSUE 5 JANUARY 2018
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The UK EndoVascular Aneurysm Repair (EVAR)
randomised controlled trials: long-term follow-up
and cost-effectiveness analysis

*Rajesh Patel, Janet T Powell, Michael J Sweeting, David M Epstein,
Jessica K Barrett and Roger M Greenhalgh*

- EVAR had significantly higher aneurysm related mortality beyond 8 years
- HR 5.82, $p= 0.006$
- Death mainly attributable to sac rupture
- Increased cancer mortality in EVAR group

Cost-effectiveness of EVAR

- At 14 years EVAR
£3798 more expensive
- Surveillance Costs
£475 more expensive

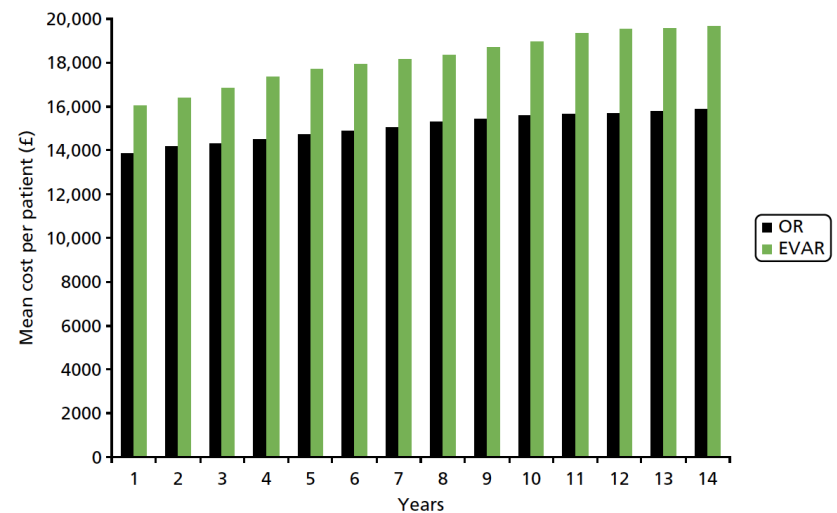
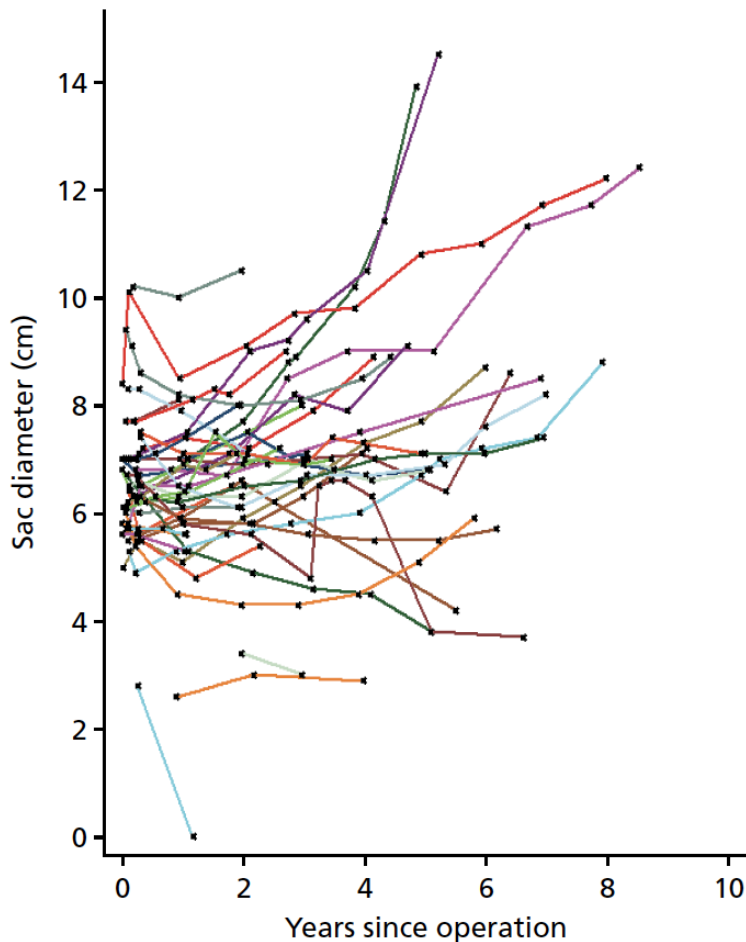


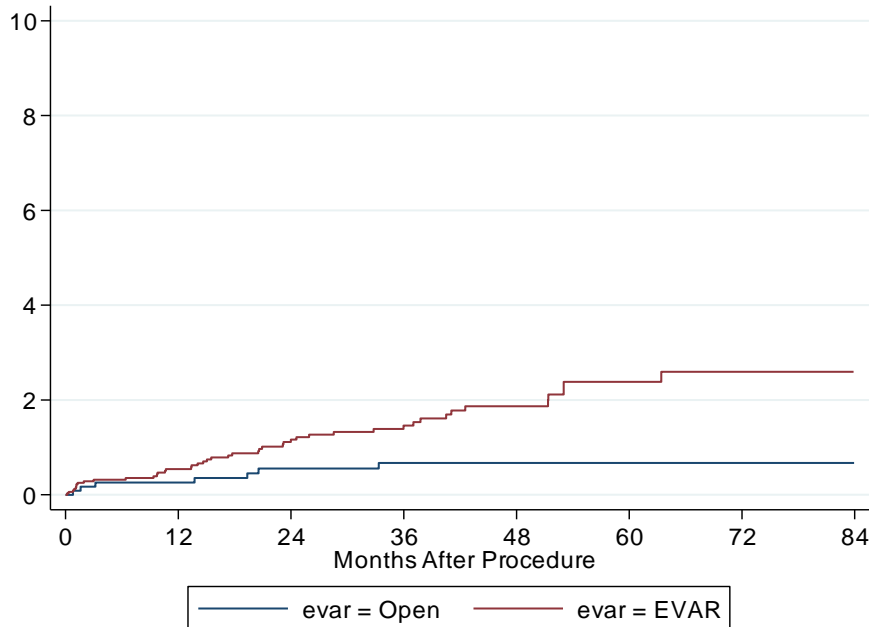
FIGURE 9 Evolution of mean cost (£) per patient in each treatment group over time. Mean cost over 14 years estimated using multiple imputation.

Sac Rupture



- Predicted sac growth of $> 4\text{mm/yr}$
- Patterns of sac growth if modeled correctly can predict sac rupture
- More comprehensive surveillance and imaging

Ruptures HES Data



- 37,138 patients
- Jan 2006 – Dec 2015
- 397 admissions with RAAA (314 EVAR)
- At 9 years RAAA rates 3.4% EVAR 0.9% OSR

Volume Outcome Reconfiguration of services

Original article

Model for the reconfiguration of specialized vascular services

P. J. E. Holt¹, J. D. Poloniecki², R. J. Hinchliffe¹, I. M. Loftus¹ and M. M. Thompson¹

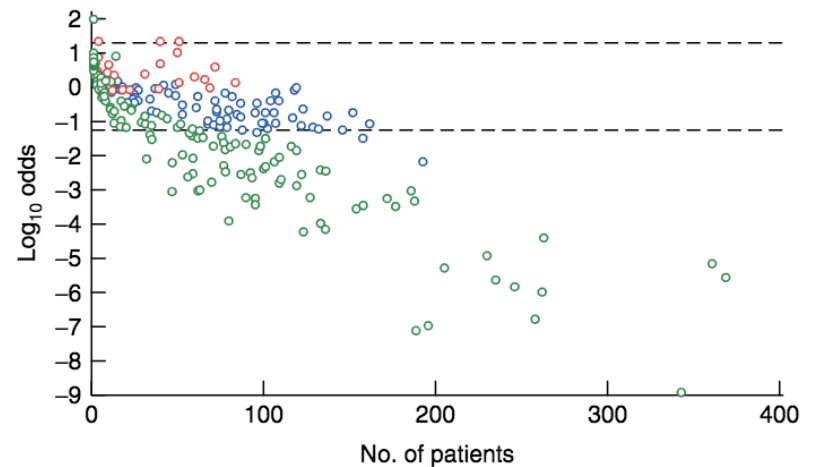
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Background: This article built on previous work to develop an algorithm for elective abdominal aortic aneurysm (AAA) repair and carotid endarterectomy (CEA), with the aim of improving patient survival by regionalization of services. Vascular procedures were used as an example of specialized surgical services.

Methods: A model was generated based on a national data set that incorporated the statistical demonstration of procedural safety, hospital annual surgical case volume, and travel distance and time. Elective AAA repair was used to construct a hub-and-spoke model that was tested against CEA. The impact of the model was quantified in terms of mortality rates, and travel distance and time.

Results: Only 48 vascular hubs were required to provide adequate coverage in England, with the majority of patients travelling for less than 1 h to access inpatient vascular surgery. The model predicted a reduction in the number of deaths from elective surgery for AAA ($P < 0.001$) and CEA ($P = 0.016$).

Conclusion: Adoption of this strategic model may lead to improved outcome after AAA and CEA. It could be used as a model for the regionalization of specialized surgery. The model does not take into account the complexity of providing a comprehensive vascular service in every locality.



Paper accepted 8 September 2008

Published online in Wiley InterScience (www.bjs.co.uk). DOI: 10.1002/bjs.6433

Radiologist ?



Conflict of Interest



Dr. Peter Holt MD

Honolulu, HI

Specialty / Subspecialties: **Radiology / General Radiology, Pediatric Radiology**

Surveillance in Honolulu



- Duplex
- CT Aorta
- Re-interventions



Evidence for EVAR Surveillance

- Poor compliance
- Endograft complications develop between surveillance scans
- Most present with symptoms
- Surveillance is not cost-effective
- Maybe harmful (cancer)
- Little evidence it prevents rupture



Motion

I urge you to support the motion

“Surveillance is a waste of time and resource”

