National Vascular Registry

Supplementary Materials for the 2026 Report



November 2026

Royal College of Surgeons of England
ADVANCING SURGICAL CARE

VASCULAR SOCIETY
OF GREAT BRITAIN AND IRELAND

BSIR British Society of Interventional Radiology

Commissioned by:

HQIP
Healthcare Quality Improvement Partnership

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Foreword

Writing the forward to the National Vascular Registry State of the Nation report 2026 is one of the unexpected pleasures of being President of the Vascular Society of Great Britain and Ireland. As we celebrate 60 years as a Society and nearly 15 years as a Surgical Specialty one of our real strengths is the quality of our data and its use to enhance Specialty performance. For that we must again thank the Clinical Effectiveness unit of the Royal College of Surgeons of England, our Vascular Surgery Colleague Professor Colin Bicknell and our Interventional Radiology colleague Dr James Harding.

The National Vascular Registry was established in 2013, as Vascular Surgery was starting its journey as a solo specialty. It was to be the National Clinical audit of Hospital based Vascular Services. Over this time, it has evolved and developed, with its data being used to shape and develop change within Vascular Surgery, thus ultimately enhancing patient outcomes.

The theme of this 2026 report is to look at variation between units in Vascular care, along with presenting the key findings for emergency (non-elective) and elective vascular procedures performed during 2025. Each year I, and I am sure many others have done this, look at my unit's data in comparison to others and identified areas where we may improve.

Having the variation of care as a focus for many key parameters gives units the opportunity, which I really hope is utilised as comprehensibly as possible, to review the report and see their unit outcomes with a view to developing strategies for improvement.

I have, I hope, generated a theme for the Vascular Society Meeting 2026 of are we where we thought we should be at nearly 15 years in as a separate specialty and I am delighted that that this NVR report provides the answers to many pathway questions, allowing units to consider many parameters and determine how they may locally improve care. When we look at the lower limb bypass results, we see that in some units over 60% of cases have a hybrid component whereas in other units this may be as low as 20%. I expect this variation will be explained by the Forthcoming National GIRFT report, when it highlights the availability of Hybrid theatres within vascular units.

The report gives units the opportunity for units to compare themselves, but the data will also help develop guidelines of care and treatment pathways within the next iteration of the Provision of Vascular Services document. This is especially the case where the numbers of cases undertaken may fall, such as in open aneurysm surgery, but where with increased case complexity the provision of Dual Consultant operating may be a necessity.

So I would again like to encourage all Vascular units to seek to assess this report in detail, consider where the options to improve are, whilst reflecting how important the case attaining is and whether there are methods to enhance this, particularly with the endovascular that has importantly arrived at over 50%.

Please do take the time to read the report in full and discuss how it may change your unit.

It is, over many aspects, an excellent document that enhances its importance year on year with additional date, such as the recording of inserted implants and I feel is responsible for a considerable amount of the progress Vascular Surgery has made in a short number of years.

Thank you again to David Cromwell, Sam Waton and team for the compilation of this important record of care.

Mr Keith G Jones
President of the Vascular Society of Great Britain & Ireland

As President of the British Society of Interventional Radiology (BSIR), I am pleased to write the foreword for the 2026 National Vascular Registry (NVR) State of the Nation Report. The report is one of the highlights of the vascular calendar. It presents the latest outcomes of UK specialist work in lower limb, carotid and aortic vascular disease. As in previous years, it is an excellent example of the collegiate working relationship between the Royal College of Surgeons of England, the Royal College of Radiologists, the British Society of Interventional Radiology and the Vascular Society.

The 2026 report shows the large volume of excellent work being undertaken by vascular specialists across the United Kingdom. The postoperative outcomes presented confirm once more that vascular interventions are delivered safely in this country. I am particularly pleased to see the strong results for complex endovascular aortic repair. Over the last three years, 1,600 fenestrated and branched procedures were recorded, with an in-hospital mortality of 1.8%.

Looking at the peripheral vascular disease, case ascertainment for lower limb angioplasty and stenting remains a concern. In England it stands at 58%, compared with 86% for lower limb bypass, and over half of units submitted data on less than half of their endovascular activity. We must all try harder to encourage IR colleagues who perform lower limb angioplasty to record their procedures and outcomes in the NVR. Only with complete data can we demonstrate the quality of the care we provide.

I would also highlight the use of day-case treatment for elective lower limb endovascular procedures. Overall, 57% were performed as day cases in 2025, a slight fall from previous years, and practice varies widely between units. Half of units treated fewer than 30% of patients as day cases, while others treated more than 70%. Day-case angioplasty benefits patients and makes better use of hospital beds, and there is clear scope to extend it.

Time to revascularisation for Chronic Limb Threatening Ischaemia (CLTI) remains a challenge, with only 50% of patients treated within the five-day standard. This is a reminder of the stretched resources for PAD treatment in the UK. It will only be resolved by increased central funding for vascular services, including expansion of the workforce, interventional radiologists among them, who treat patients with vascular disease. It is also crucial to further enhance collaboration between the specialities to maximise the use of IR capacities in various units to combat the increasing demands and facilitate the best care to patients with critical leg ischemia in the most cost effective and efficient way using the available resources.

As President of the BSIR, I thank everybody involved in the work required to create this report. I offer special thanks to Mr Sam Waton (NVR Project Manager), Dr Amundeep Johal (Senior Statistician), Dr Qiuju Li (Research Fellow in Medical Statistics), Dr Frances Sheehan and Dr Panagiota Birmpili (NVR Clinical Research Fellows), and Professor David Cromwell (CEU Director) for leading on the production of the report. Thanks are also due to Prof Colin Bicknell (representing the VSGBI) and Dr James Harding (representing the BSIR) for providing their expertise as Society specialists.

Dr Raghu Lakshminarayan
President of the British Society of Interventional Radiology

1. Introduction

Hospital-based vascular services provide care for a variety of conditions that affect blood circulation (conditions that are part of the broad spectrum of cardiovascular disease). Treatments are typically aimed at reducing the risk of cardiovascular events such as a heart attack, stroke or rupture of an artery, and the appropriate therapeutic options will depend upon the severity of a patient's condition as well as the extent of other coexisting conditions.

The National Vascular Registry (NVR) was established in 2013 to measure the quality and outcomes of care for adult patients who undergo major vascular procedures in NHS hospitals, and to support vascular services to improve the quality of care for these patients.

This document provides supplementary materials for our 2026 State of the Nation Report (available at: https://www.vsqip.org.uk/reports-publications/2026-nvr-state-of-the-nation-report/)

Information is presented on clinical practice in the calendar year of 2025, and on surgical outcomes for the previous three-year period (2023-25). The NVR publishes information on emergency and elective procedures for the following patient groups:

1. **patients with peripheral arterial disease (PAD)** who undergo either (a) lower limb angioplasty/stent, (b) lower limb bypass surgery, or (c) lower limb amputation
2. patients who have a repair procedure for **(abdominal) aortic aneurysm (AAA) or dissection**
3. patients who **undergo carotid endarterectomy or carotid stenting.**

The NVR was designed as a procedure-based audit. Although vascular units provide care to patients with a variety of conditions that affect blood circulation, not all patients will receive a procedure within the scope of the NVR.

The NVR is commissioned by the Healthcare Quality Improvement Partnership (HQIP) on behalf of NHS England, as part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP). Clinical audits commissioned by HQIP typically cover NHS hospitals in England and Wales. The NVR encourages all NHS hospitals in England, Wales, Scotland and Northern Ireland to participate, so that it continues to support the work of the Vascular Society of Great Britain and Ireland (VSGBI) and British Society of Interventional Radiologists (BSIR) to improve the care provided by vascular services within the UK. It is mandatory for individual clinicians to collect data on the outcomes of these procedures for medical revalidation, and the NVR is designed to facilitate this. The information patterns of practice and patient outcomes also play a crucial role in the commissioning of NHS vascular services.

1.1 The 2026 NVR Report Supplementary Materials

The aim of this Supplementary Materials document is to give a description of the care provided by NHS vascular units, and outcomes delivered to patients.

It is aimed at those who provide, receive, commission and regulate vascular services. This includes clinicians and other healthcare professionals working within hospital vascular units, clinical commissioners and regulators, as well as patients and the public who are interested in knowing how NHS vascular services are delivered.

More information about the various vascular diseases described in this report can be found on the Circulation Foundation website at:

https://www.circulationfoundation.org.uk/patient_info/

The outcome indictors adopted by the NVR were chosen to help vascular specialists benchmark their performance and, where possible, reduce the risk associated with the procedure. Short-term survival after surgery is the principal outcome measure for all arterial procedures, but this report also provides information about other outcomes, waiting times for treatment and the complications that may occur as part of treatment.

The NVR process measures are linked to standards of care that are drawn from various national guidelines. These focus on (i) specific aspects of care before and after a vascular intervention, and (ii) the time taken by patients to move along the care pathway. An overall framework for vascular services is described by the "Provision of Services for People with Vascular Disease" published by the Vascular Society [VSGBI 2024]. Standards of care specific to the various vascular conditions procedures are described within the documents listed below.

For elective AAA repair

- The Vascular Society. "Quality Improvement Framework for AAA" [VSGBI 2012]
- Standards and outcome measures for the National AAA Screening Programme (NAAASP) [NAAASP 2020].

For peripheral arterial disease

- The Vascular Society. "A Best Practice Clinical Care Pathway for Peripheral Arterial Disease" [VSGBI 2022]
- The Vascular Society. "A Best Practice Clinical Care Pathway for Major Amputation Surgery" [VSGBI 2016]
- National Institute for Health and Clinical Excellence (NICE). Guidance for peripheral arterial disease (CG147) [NICE 2012].

For carotid endarterectomy

- National Institute for Health and Clinical Excellence (NICE). Stroke: The diagnosis and acute management of stroke and transient ischaemic attacks (NG128) [NICE 2019]
- National Stroke Strategy [DH 2007] and its associated publication "Implementing the National Stroke Strategy – an imaging guide" [DH 2008].

1.2 Publication of information on the VSQIP website

There are additional resources that accompany this document available on the NVR website at: https://www.vsqip.org.uk/reports-publications/2026-nvr-state-of-the-nation-report/

These include the main state of the nation report document and appendices (data tables) containing individual NHS trust results.

The website also provides access to:

- all previous Annual Reports
- the NVR's interactive results dashboard
- information on how to access your NVR data
- links to resources that support local services' quality improvement initiatives
- information on how the Registry collects and analyses patient data
- links to other sources of information about vascular conditions.

The results from the NVR are used by various other national healthcare organisations. In particular, the NVR has worked with HQIP and the Care Quality Commission (CQC) intelligence team to create a dashboard to support their inspections.

1.3 How to read this document

The results in this document are based primarily on vascular interventions that took place within the UK between 1 January 2023 and 31 December 2025. As noted above, the scope of the NVR extends only to patients who underwent a procedure. The NVR does not collect the details of patients who were admitted to hospital with a vascular condition (e.g. a ruptured AAA) but did not undergo an operation.

The data used in this document was extracted from the NVR IT system in May 2026. This was to enable NHS hospitals to enter follow-up information about the patients having these vascular interventions, and to provide a period in which NHS consultants could check the completeness and accuracy of their data. The analysis of the 2023-25 audit period only included records on the NVR IT system that were "locked" by NHS staff (i.e. this mechanism indicates that data entry is complete).

Results are typically presented as totals and/or percentages, medians and interquartile ranges (IQR). Where appropriate, numerators and denominators are given. In a few instances, the percentages do not add up exactly to 100%, which is typically due to the rounding up or down of the individual values, or where multiple responses can be recorded.

Where individual NHS trust and Health Board results are given, the denominators are based on the number of cases for which the question was applicable and answered. The number of cases included in each analysis may vary depending on the level of information that has been provided by NHS services and the total number of cases that meet the inclusion criteria for each analysis. Details of data submissions are given in the NHS trusts tables available on the NVR website.

For clarity of presentation, the terms NHS trust or Trusts have been used generically to describe NHS trusts and Health Boards. Appendix 1 provides a list of NHS vascular units for which results are published.

Unless stated otherwise, results are presented for all four UK nations (England, Wales, Scotland and Northern Ireland). Where case ascertainment is mentioned, the number of records in the NVR were compared to the number of procedures recorded in the administrative hospital databases used in each nation: HES in England, PEDW in Wales, SMR01 in Scotland and HIS in Northern Ireland.

Funnel plots are used to assess whether there are systematic differences in mortality rates between NHS organisations. This is a widely used graphical method for comparing the outcomes of surgeons or hospitals. In these plots, each dot represents an NHS organisation. The solid horizontal line is the national average. The vertical axis indicates the outcome, with dots higher up the axis showing NHS trusts with a higher stroke and/or death rate. The horizontal axis shows NHS trust activity, with dots further to the right showing the Trusts that perform more operations. The benefit of funnel plots is that they show whether the outcomes of NHS trusts differ from the national average by more than would be expected from random fluctuations. Random variation will always affect outcome information like mortality rates, and its influence is greater among small samples. This is shown by the funnel-shaped dotted lines. These lines define the region within which we would expect the outcomes of NHS trusts to fall if their outcomes only differed from the national rate because of random variation.

The postoperative mortality rates for each NHS vascular unit are adjusted to take into account differences in the case mix of patients treated at each organisation. The risk-adjusted rates were derived using multivariable logistic models. These models estimate the likelihood of postoperative death for each individual having a procedure, and these probabilities were then summed to calculate the predicted number of events for each NHS trust.

Waiting times plots are used to show the comparison of NHS trusts. In these plots the median time is represented by a black dot. The interquartile ranges (IQRs) are shown by horizontal green lines. Any horizontal lines in red indicate that the upper quartile is beyond the upper limit of the x axis of the graph (usually as a result of a small volume of procedures). The vertical red line on the graphs represents the current national average or the national target.

In some chapters, the change in distribution of patient waiting times by month is shown using a graph that uses a sequence of box plots. Each box plot summarises five points in the distribution. The bottom and top lines of the blue rectangles indicate the lower (Q1) and upper quartiles (Q3). The horizontal line inside the rectangle represents the median time. The lower and upper whiskers show the minimum or maximum values (or the distance that is 1.5 times the inter-quartile range (Q3 - Q1) if this is closer to the median).

2. Lower limb revascularisation for PAD

2.1 Introduction

This chapter describes the processes and outcomes of care for patients who have a lower limb revascularisation. Lower limb revascularisation procedures can be performed using open surgery (bypass), endovascular techniques or a combination of both (hybrid). In this chapter, we report on procedures performed between January 2025 and December 2025.

The analysis focuses on the first procedure undergone by a patient during an admission; subsequent procedures are considered to be re-operations. Hybrid procedures are analysed with the open surgical (bypass/endarterectomy) procedures, except for Table 2.1 and Figure 2.1.

Figure 2.1 shows the frequency of each type of procedure by NHS trust, for those Trusts that perform all three types. For Trusts that have lower case ascertainment for angioplasty compared to bypass in the NVR, the figure does not depict the true distribution of procedures and should be interpreted with caution.

Table 2.1: Number (percentage) of lower limb revascularisation procedures recorded in NVR, by year

	2023	2024	2025
Endovascular procedures	10,138 (57.9)	9,989 (57.8)	9,124 (57.9)
Bypass procedures	4,997 (28.6)	4,721 (27.3)	4,030 (25.6)
Hybrid procedures	2,370 (13.5)	2,566 (14.9)	2,604 (16.5)

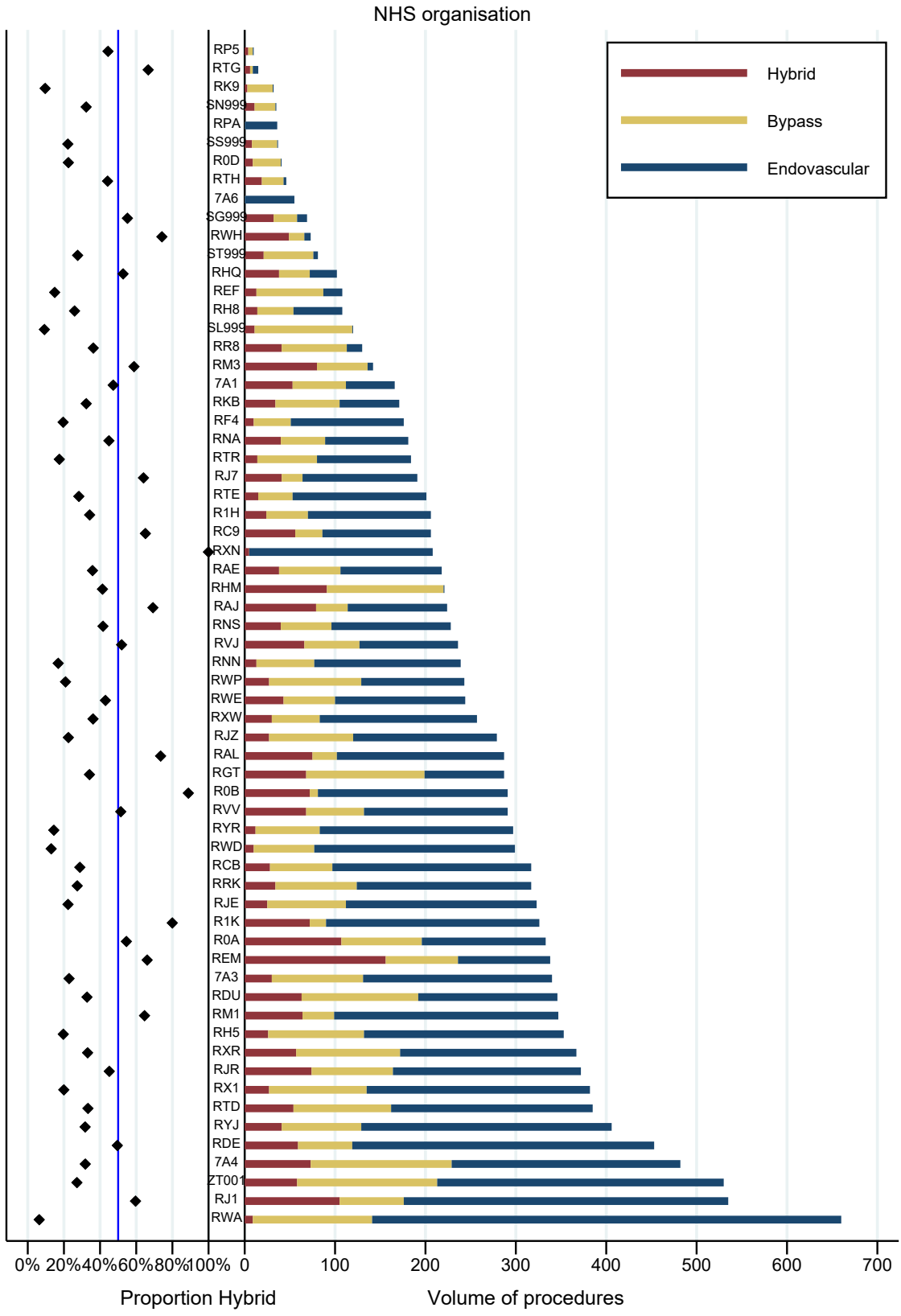
Table 2.2: Estimated case ascertainment for lower limb revascularisation procedures, by year

	Open surgical procedures			Endovascular procedures		
	2023	2024	2025	2023	2024	2025
NVR procedures	7,366	7,288	6,634	10,129	9,929	9,124
NVR HES Equivalent Procedures	7,366	7,288	6,634	10,310	10,125	8,899
Expected procedures	7,488	7,702	7,618	15,869	16,618	15,801
Estimated case ascertainment	98%	95%	87%	65%	61%	56%

Table 2.3: Estimated case ascertainment rates in 2025 by UK country

	Open surgical procedures	Endovascular procedures
England	86%	58%
Wales	>100%	>100%
Scotland	37%	8%
Northern Ireland	99%	86%

Figure 2.1: Frequency of each type of revascularisation procedure by NHS trust for 2025



2.2 Patient characteristics

Table 2.4: Characteristics of patients undergoing lower limb revascularisation in 2025

	Elective				Non-elective			
	Endovascular		Open surgical		Endovascular		Open surgical	
	No.	%	No.	%	No.	%	No.	%
Total procedures	5,700	62.5	3,894	58.7	3,424	37.5	2,740	41.3
Age group (years)								
Under 60	833	14.7	682	17.6	487	14.3	448	16.5
60 to 69	1,655	29.3	1,380	35.5	952	27.9	924	34.0
70 to 79	1,938	34.3	1,329	34.2	1,102	32.3	938	34.5
80 and over	1,231	21.8	492	12.7	872	25.6	411	15.1
Men	3,917	68.7	2,909	74.7	2,436	71.1	1,939	70.8
Women	1,783	31.3	985	25.3	988	28.9	801	29.2
Smoking status								
Current smoker	1,393	24.5	1,298	33.4	787	23.1	1,165	42.6
Ex-smoker	3,035	53.4	2,207	56.7	1,552	45.5	1,259	46.0
Never smoked	1,261	22.2	387	9.9	1,072	31.4	314	11.5
Comorbidities								
None	535	9.4	402	10.3	167	4.9	304	11.1
Diabetes	3,004	52.7	1,457	37.4	2,401	70.2	1,224	44.7
Hypertension	3,621	63.6	2,657	68.2	2,123	62.1	1,718	62.7
Chronic lung disease	1,123	19.7	1,035	26.6	638	18.7	744	27.2
Ischaemic heart disease	1,524	26.8	1,092	28.0	1,027	30.0	845	30.8
Chronic heart failure	595	10.5	251	6.5	495	14.5	280	10.2
Chronic renal disease	1,031	18.1	442	11.4	989	28.9	391	14.3
Stroke	513	9.0	284	7.3	375	11.0	239	8.7
Medication								
None	185	3.3	21	0.5	83	2.4	14	0.5
Antiplatelet	4,323	75.9	3,269	84.0	2,362	69.1	2,056	75.0
Statin	4,226	74.2	3,227	82.9	2,538	74.3	2,146	78.3
Beta blocker	1,680	29.5	1,021	26.2	1,216	35.6	816	29.8
ACE inhibitor	1,970	34.6	1,427	36.7	1,348	39.4	1,023	37.3

2.3 Procedure characteristics

Most endovascular procedures in 2025 were performed under local anaesthetic (87.4%), with 3.3% under regional and 9.3% under general anaesthetic. The procedures involved 14,945 interventions in vessels in 2025.

Half of the endovascular procedures involved treatment of a single vessel (51.4%), with 32.6% treating two, 11.7% treating 3 and 2.7% treating 4 or more vessels.

Balloon angioplasty was the most common type of intervention (11,218 vessels, 75.1%), while 3,727 (24.9%) were a combination of angioplasty and stenting. The success rate of the procedures (defined as successful by the operator) was high overall, although the rate decreased slightly for anatomic locations further down the leg.

Table 2.5: Treated vessels during lower limb endovascular procedures between 2023 and 2025

	2023		2024		2025	
Artery	Number	%	Number	%	Number	%
Aorta	102	0.6	108	0.6	84	0.6
Common iliac	2,074	12.5	2,048	12.3	1,763	11.8
External iliac	1,692	10.2	1,681	10.1	1,604	10.7
Superficial femoral	4,686	28.3	4,667	28.0	4,174	27.9
Common femoral/ profunda femoral	640	3.9	834	5.0	682	4.6
Popliteal	3,059	18.5	3,130	18.7	2,722	18.2
Tibial/pedal	3,645	22.0	3,618	21.7	3,390	22.7
Within graft	642	3.9	611	3.7	526	3.5
Total vessels	16,540		16,697		14,945	

Table 2.6: Characteristics of lower limb endovascular procedures undertaken in 2025 by anatomical location

	Vessels treated		Stent insertion		Non-occlusive[1]		Procedure success[2]	
	n	%	n	%	n	%	n	%
Aorta	84	0.6	60	71.4	-	-	-	-
Common iliac	1,763	11.8	1,269	72.0	1,123	66.0	1,679	97.4
External iliac	1,604	10.7	796	49.6	1,117	71.6	1,535	97.5
Superficial femoral	4,174	27.9	924	22.1	2,257	55.0	3,883	94.4
CFA, PFA	682	4.6	96	14.1	485	73.6	619	93.5
Popliteal	2,722	18.2	428	15.7	1,485	56.0	2,525	94.3
Tibial/pedal	3,390	22.7	117	3.5	1,527	45.7	2,804	83.6
Within graft	526	3.5	37	7.0	400	76.6	490	94.0

[1] The other indication for intervention was occlusion.

[2] The other outcomes were residual stenosis and failure.

Table 2.7: Characteristics of lower limb revascularisation procedures undertaken in 2025

	Elective		Non-elective	
	Endovascular	**Open**	**Endovascular**	**Open**
Chronic limb ischaemia				
Asymptomatic	322 (5.7%)	40 (1.0%)	42 (1.2%)	22 (0.8%)
Intermittent claudication	1,747 (30.7%)	1,033 (26.5%)	139 (4.1%)	59 (2.2%)
Nocturnal/resting pain	1,123 (19.7%)	1,215 (31.2%)	375 (11.0%)	486 (17.7%)
Necrosis/gangrene	2,196 (38.6%)	1,087 (27.9%)	2,550 (74.5%)	1,477 (53.9%)
Acute limb ischaemia	218 (3.8%)	154 (4.0%)	265 (7.7%)	568 (20.7%)
Trauma	8 (0.1%)	6 (0.2%)	17 (0.5%)	25 (0.9%)
Aneurysm	83 (1.5%)	359 (9.2%)	36 (1.1%)	103 (3.8%)

Trusts should aim to perform at least 75% of lower limb revascularisation on planned operating lists.

Overall, 97.5% of the endovascular revascularisations were performed between 8am and 6pm on a weekday, which was assumed to mean they had been on planned operating lists. The percentage of endovascular procedures performed on planned lists was at least 75% for all NHS trust among those that submitted 10 or more procedures in 2025. This suggests that, among those Trusts with high case ascertainment, all met the VSGBI PAD QIF target of at least 75% during the 2025 audit period (60 NHS trusts in total).

There were 3,894 (58.7%) elective open procedures and 2,740 (41.3%) non-elective procedures in 2025. For open procedures in 2025, 90.0% were performed under general anaesthetic, 7.3% under regional and 2.7% under local.

There were 6,255 (94.4%) open procedures undertaken in 2025 that were performed between 8am and 6pm. This is 98.3% for elective and 89.0% for nom-elective procedures. The percentage of open surgical procedures performed on planned lists was at least 75% for all NHS trusts that submitted 10 or more procedures in the NVR in 2025 (60 NHS trusts in total).

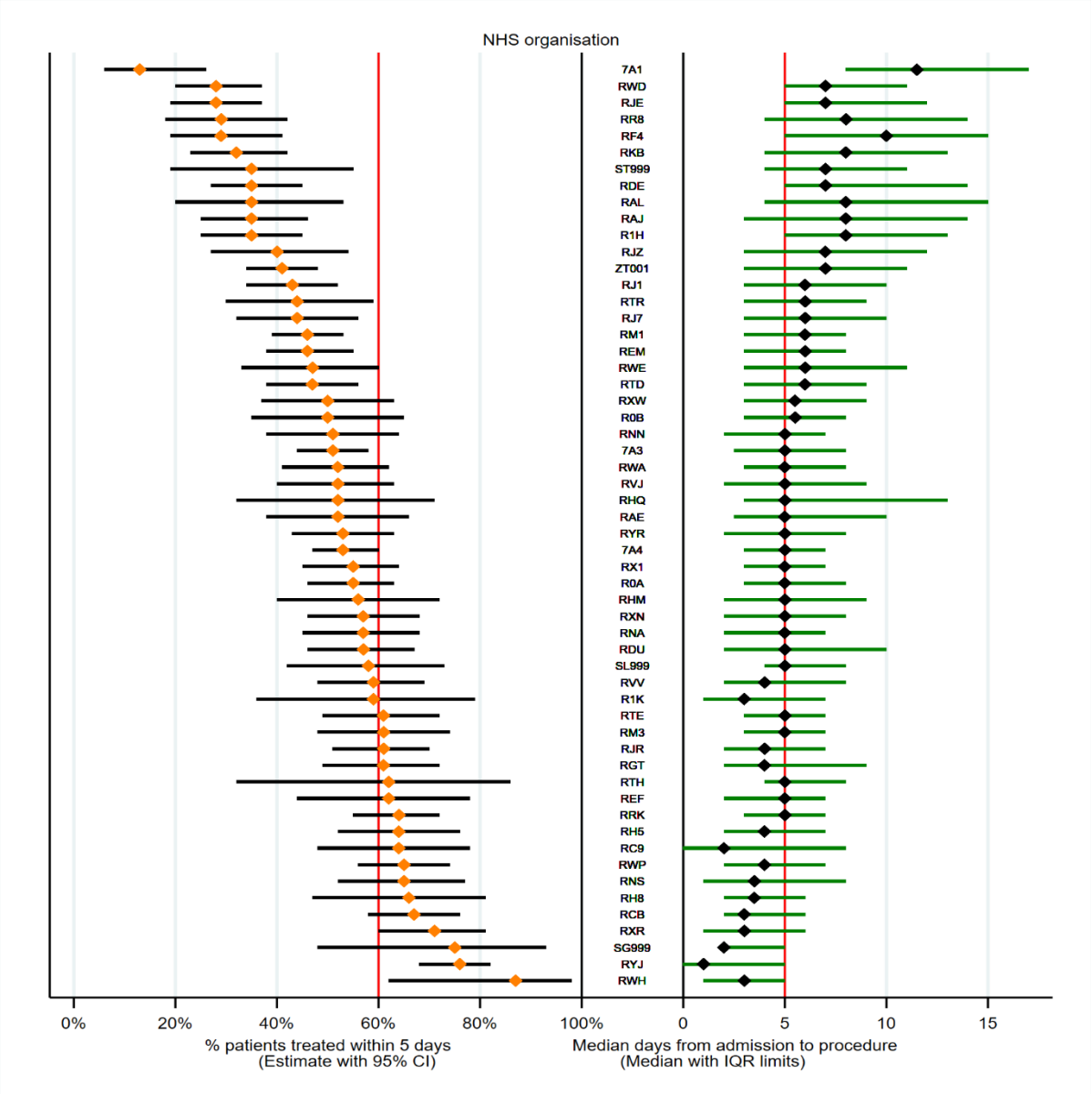
Table 2.8: Time to intervention for patients admitted non-electively with CLTI

		Time from admission to intervention					
	N (%)	% ≤5 days			Median (IQR), days		
	2025	2023	2024	2025	2023	2024	2025
Endovascular	6,244	-	-	-	-	-	-
Elective	3,319 (53.2%)	-	-	-	-	-	-
Non-elective	2,925 (46.8%)	48.6%	47.4%	49.0%	6 (3-9)	6(3-10)	6 (3-9)
Open	4,265		-	-	-	-	-
Elective	2,302 (54.0%)		-	-	-	-	-
Non-elective	1,963 (46.0%)	53.0%	52.6%	52.1%	5 (2-8)	5 (2-8)	5 (2-8)
Total	10,509	-	-	-	-	-	
Elective	5,621 (53.5%)	-	-	-	-	-	
Non-elective	4,888 (46.5%)	50.5%	49.5%	50.3%	5 (3-9)	6(3-9)	5 (3-9)

Figure 2.2 depicts the proportion of patients revascularised within 5 days from admission (left panel) across the 56 NHS trusts that performed 10 or more revascularisation procedures for non-elective CLTI admissions in 2025. The right panel summarises the median (IQR) time from admission to procedure for the same NHS trusts. In summary:

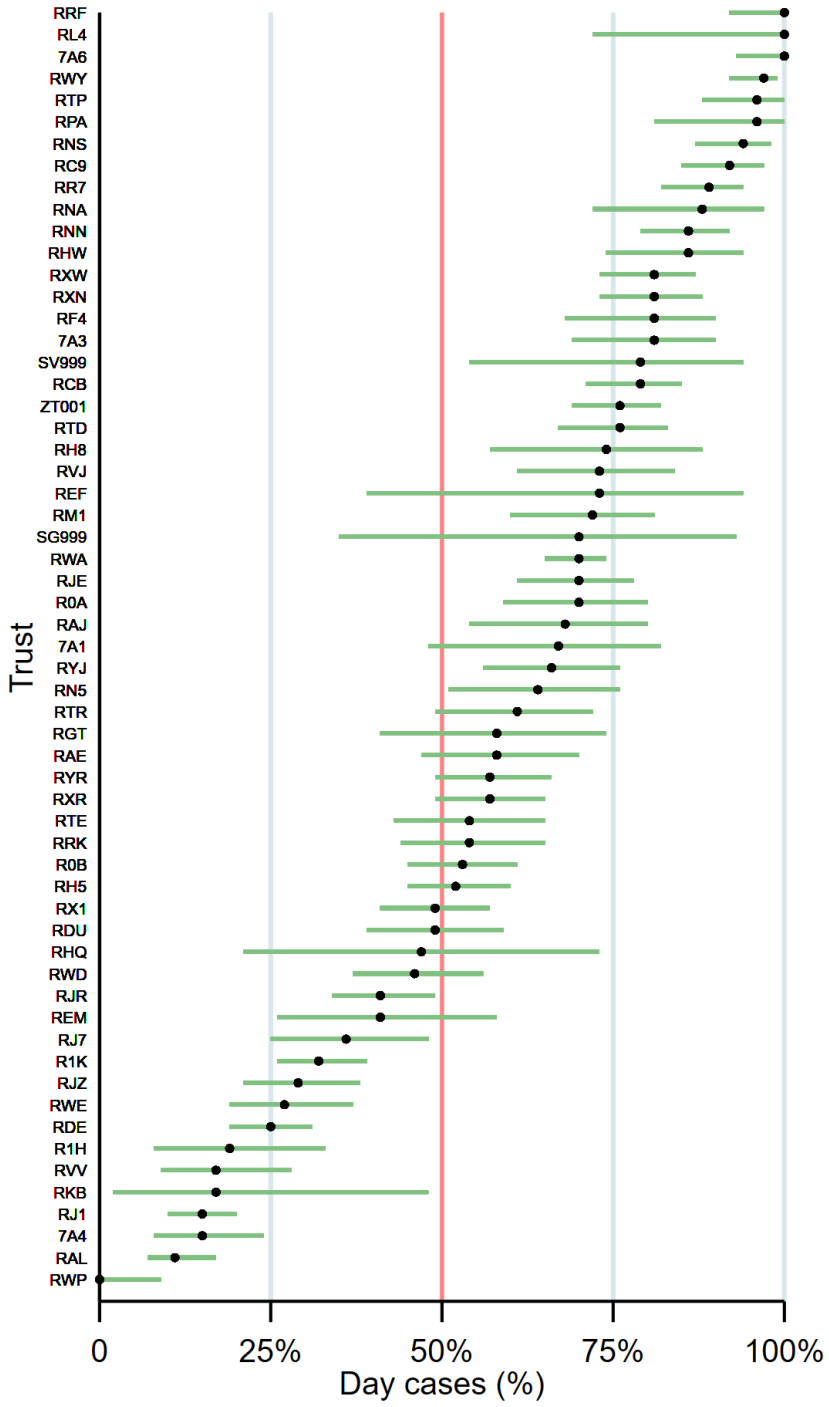
- at 22 vascular units, the pathway from admission to surgery took more than five days for half of patients with CLTI,
- at 15 vascular units, the pathway took longer than 10 days for a quarter of patients,
- 34 vascular units had more than half of their non-elective CLTI patients operated on within 5 days.

Figure 2.2: Proportion of non-elective patients with CLTI who had revascularisation (open, endovascular or hybrid) within 5 days from admission by active NHS trust with a volume of ≥10 non-elective CLTI cases per year in 2025.



The 2018 GIRFT report on vascular services emphasised the potential gains in efficiency that could stem from a greater number of endovascular revascularisation procedures being performed on a same-day basis [Horrocks 2018]. The NVR data for 2025 revealed substantial variation in the proportion of elective procedures done as day cases (Figure 2.3). Overall, 57.5% of elective endovascular procedures were performed as day cases in 2025, compared to 56.9% in 2024 and 60.4% in 2023.

Figure 2.3: Proportion of elective endovascular procedures performed as day cases, by NHS trust with a volume of ≥10 elective cases per year in 2025.



2.4 Outcomes of lower limb revascularisation procedures

Table 2.9: Postoperative outcomes after lower limb revascularisation for 2025 by procedure type

	Elective		Non-elective	
	Endovascular	**Open**	**Endovascular**	**Open**
Total procedures	5,700	3,894	3,424	2,740
Post-op destination	**n (%)**	**n (%)**	**n (%)**	**n (%)**
Ward	2,644 (46.4%)	2,707 (69.5%)	3,129 (91.6%)	1,881 (68.6%)
Level 2 (HDU/PACU)	99 (1.7%)	911 (23.4%)	58 (1.7%)	586 (21.4%)
Level 3 (ICU)	9 (0.2%)	229 (5.9%)	50 (1.5%)	270 (9.9%)
Died in theatre	<5 (<0.1%)	0 (0.0%)	0 (0.0%)	<5 (<0.1%)
Day-case unit	2,942 (51.7%)	46 (1.2%)	179 (5.2%)	<5 (<0.1%)
Complications	**Rate**	**Rate**	**Rate**	**Rate**
None	93.7	84.8	84.5	72.8
Cardiac	0.4	1.5	1.9	3.2
Respiratory	0.4	1.9	1.5	3.8
Limb ischaemia	0.5	2.3	3.2	7.4
Renal failure	0.1	0.8	1.1	1.4
Further procedures				
None	95.9	91.6	76.9	78.8
Angioplasty/stent	1.7	1.7	7.4	3.9
Bypass	0.6	2.2	3.2	4.1
Minor amputation	1.2	1.6	11.4	5.8
Major amputation	0.5	1.0	5.1	6.2
30-day major amputation	0.8	1.1	6.3	6.7
In-hospital mortality	0.9	1.2	3.9	4.5
Re-admission to higher level care	0.7	1.7	2.1	3.7
Re-admission within 30 days	10.0	11.7	19.9	17.1
	Median (IQR)	**Median (IQR)**	**Median (IQR)**	**Median (IQR)**
Overall LOS (days)	0 (0 - 1)	5 (3 - 8)	13 (6 - 25)	14 (9 - 25)
Admission-to-procedure (days)	0 (0 - 0)	0 (0 - 0)	5 (2 - 9)	4 (2 - 8)
Post-op LOS (days)	0 (0 - 1)	4 (3 - 7)	6 (2 - 16)	8 (5 - 17)

Table 2.10: Postoperative outcomes following lower limb revascularisation, for patients with CLTI[1] undergoing non-elective revascularisation in 2025, by admission-to-procedure time in days

	Admission-to-procedure ≤5 days		Admission-to-procedure >5 days	
	Endovascular	**Open**	**Endovascular**	**Open**
Procedures	1,427 (49.0%)	1,023 (52.1%)	1,483 (51.0%)	939 (47.9%)
	Median (IQR)	**Median (IQR)**	**Median (IQR)**	**Median (IQR)**
Overall length of stay (LOS)	8 (4 - 16)	10 (7 - 18)	20 (13 - 33)	21 (14 - 34)
Post-op LOS	5 (1 - 13)	7 (4 - 15)	8 (3 - 19)	10 (6 - 20)
Complications	**Rate**	**Rate**	**Rate**	**Rate**
None	86.3	76.1	82.5	71.9
Cardiac	1.5	2.3	2.2	4.3
Respiratory	1.1	2.5	1.5	4.7
Limb ischaemia	3.2	5.4	3.2	6.2
Renal	0.4	1.4	1.6	1.0
Further unplanned procedures				
None	75.7	80.9	76.2	78.7
Angioplasty/stent	6.4	3.0	8.8	5.8
Bypass	3.5	3.3	2.6	4.0
Minor amputation	12.9	6.6	12.2	7.8
Major amputation	5.1	4.8	5.4	5.1
30-day major amputation	6.0	5.4	6.7	5.5
In-hospital mortality	2.9	2.6	4.5	4.9
Re-admission to higher level care	1.3	2.0	2.6	4.4
Re-admission within 30 days	19.9	16.3	20.6	20.1

[1] Fontaine score 3 or 4

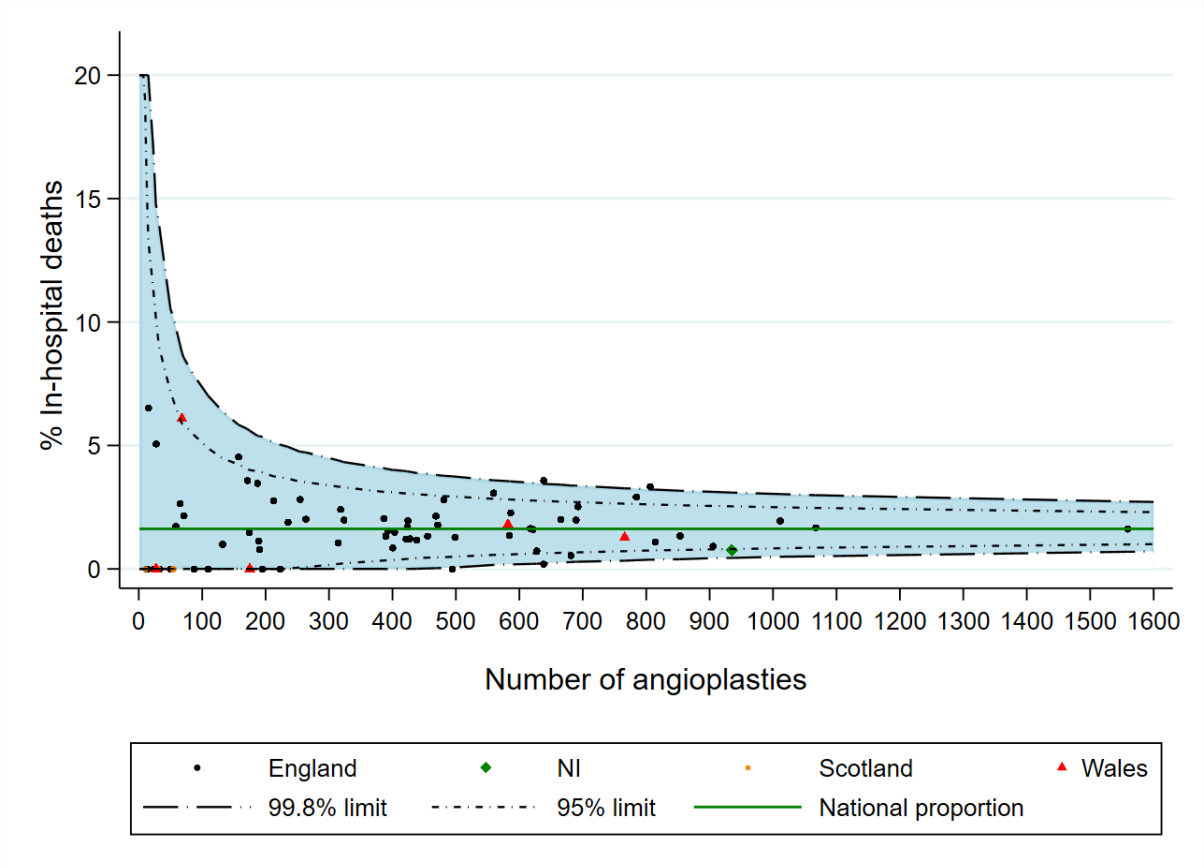
2.5 Postoperative mortality rates for lower limb revascularisations

Figure 2.4 presents the risk-adjusted mortality rates for each NHS trust that submitted 10 or more endovascular revascularisations between January 2023 and December 2025. All but two NHS trusts had a risk-adjusted rate of postoperative in-hospital mortality that fell within the expected range of the overall national average of 1.7% (95% CI: 1.5 to 1.8).

The rates of in-hospital mortality after endovascular revascularisation were adjusted to take account of the differences in patient populations within each organisation. The model included admission mode, presenting problem, Fontaine score, patient age, chronic lung disease, Ischaemic heart disease, chronic renal disease, chronic heart failure and smoking status.

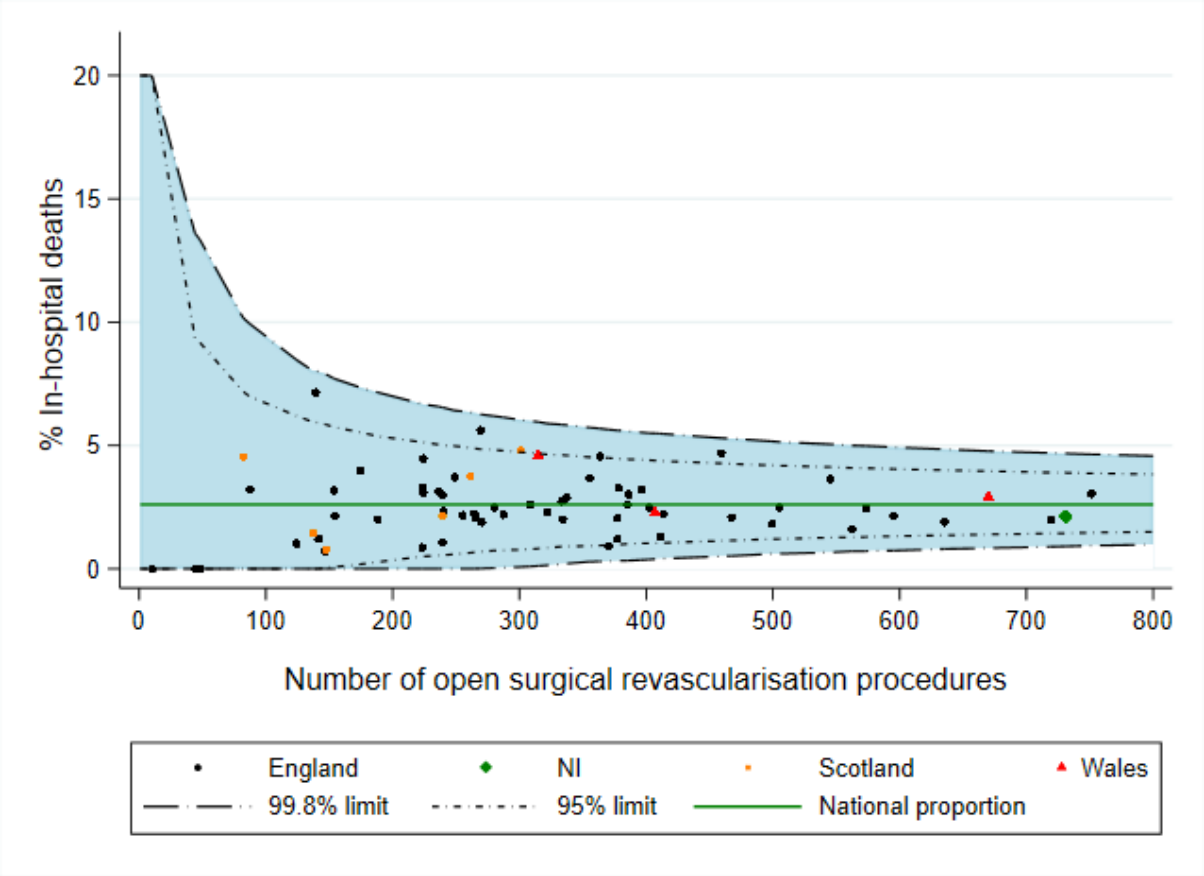
The funnel plot for open surgical procedures is shown in Figure 2.5. All NHS trusts had risk-adjusted mortality rates that were within the expected range of the national average (=2.6%, 95% CI: 2.4 to 2.8). The risk adjustment model accounted for age, sex, procedure type, Fontaine score, mode of admission, ASA grade, chronic lung disease, use of antiplatelets, white blood count and haemoglobin, creatinine, sodium and potassium levels.

Figure 2.4: Funnel plot of risk-adjusted in-hospital deaths after lower limb endovascular revascularisation for NHS trusts from January 2023 to December 2025.



Note: This figure is based on data from NHS trusts that continue to offer endovacsular revascularisation, with 10 or more procedures in the NVR.

Figure 2.5: Funnel plot of risk-adjusted in-hospital deaths from lower limb bypass for NHS trusts, shown for procedures performed between January 2023 and December 2025.



3. Major lower limb amputation

3.1 Introduction

This chapter describes the patterns of care and outcomes for patients undergoing unilateral major lower limb amputations due to vascular disease during the 2025.

Table 3.1: Number of major amputations submitted to NVR. AKA: Above knee amputation; BKA: below knee amputation

	2023		2024		2025	
	AKA	BKA	AKA	BKA	AKA	BKA
Total major amputations	2,044	2,467	1,922	2,219	1,740	1,965
Bilateral	29 (1.4%)	40 (1.6%)	27 (1.4%)	18 (0.8%)	34 (2.0%)	28 (1.4%)
Due to trauma	22 (1.1%)	17 (0.7%)	20 (1.0%)	23 (1.0%)	9 (0.5%)	15 (0.8%)
Major amputations performed within 30 days of a lower limb revascularisation procedure	244 (11.9%)	383 (15.5%)	241 (12.5%)	349 (15.7%)	206 (11.8%)	265 (13.5%)

Procedures that were bilateral and/or due to trauma were excluded from the analysis of this chapter thereafter. During the audit period from January 2025 to December 2025, 3,620 major unilateral amputations were recorded in the NVR, which consisted of 1,923 (53.1%) below the knee amputations (BKAs) and 1,697 (46.9%) above the knee amputations (AKAs). Through knee amputations (TKAs) have been analysed as part of the BKA group. TKAs accounted for 3.7% of all major amputations recorded on the NVR during 2025.

Table 3.2: Case ascertainment for major unilateral lower limb vascular amputations by year

Case ascertainment	2023	2024	2025
NVR procedures	4,404	4,054	3,620
Expected procedures	4,894	4,636	4,467
Estimated case ascertainment	90%	87%	81%

Table 3.3: Estimated case ascertainment rates in 2025 by UK country

	Major Lower Limb Amputation
England	85%
Wales	>100%
Scotland	35%
Northern Ireland	88%

3.2 Patient Characteristics

Table 3.4: Characteristics of patients undergoing major unilateral lower limb amputation in 2025

	Below knee	%	Above knee	%
Total procedures	1,923		1,697	
Age group (years)				
Under 60	557	29.0	318	18.8
60 to 64	310	16.1	223	13.2
65 to 69	311	16.2	291	17.2
70 to 74	276	14.4	292	17.2
75 to 79	254	13.2	262	15.5
80 and over	212	11.0	307	18.1
Sex				
Men	1,491	77.5	1,240	73.1
Women	432	22.5	457	26.9
Smoking				
Current smoker	550	28.7	641	37.9
Ex-smoker	833	43.5	754	44.6
Never smoked	531	27.7	296	17.5
Presenting problem				
Acute limb ischemia	150	7.8	361	21.3
Chronic limb ischemia	554	28.8	485	28.6
Neuropathy	32	1.7	10	0.6
Tissue loss	685	35.6	550	32.4
Uncontrolled infection	498	25.9	267	15.7
Aneurysm	<5	0.2	24	1.4
Previous ipsilateral limb procedure*	1,046	66.9	806	57.2
Type of previous ipsilateral limb procedure**				
Minor amputation only	185	17.9	23	2.9
Angioplasty/stent	461	44.7	223	28.3
Surgical revascularisation	326	31.6	376	47.7
Major amputation	59	5.7	166	21.1

*Column percentages calculated from records with available data on previous ipsilateral limb procedure Yes/No; **Column percentages calculated from records with available data in patients with previous ipsilateral limb procedure

Table 3.5: Preoperative care and risk factors of patients undergoing lower limb amputation in 2025

	Below knee	%	Above knee	%
Total procedures	1,923		1,697	
Pre-op ASA grade				
Normal	22	1.1	12	0.7
Mild disease	109	5.7	70	4.1
Severe, not life-threatening disease	1,354	70.5	1,034	61.0
Severe, life-threatening disease, or moribund patient	436	22.7	578	34.1
Comorbidities				
None	134	7.0	157	9.3
Diabetes	1,405	73.1	828	48.8
Hypertension	1,169	60.8	1,062	62.6
Chronic lung disease	351	18.3	447	26.3
Ischaemic heart disease	581	30.2	589	34.7
Chronic heart failure	251	13.1	268	15.8
Chronic renal disease	415	21.6	336	19.8
Stroke	192	10.0	214	12.6
Active/managed cancer	117	6.1	165	9.7
Medication				
None	11	0.6	12	0.7
Anti-platelet	1,267	65.9	1,116	65.8
Statin	1,395	72.5	1,203	70.9
Beta-blocker	601	31.3	565	33.3
ACE inhibitor/ARB	674	35.0	512	30.2
Antibiotic prophylaxis	1,763	91.7	1,522	89.7
DVT prophylaxis	1,325	68.9	1,129	66.5
Oral anticoagulant	448	23.3	441	26.0

3.3 Care Pathways

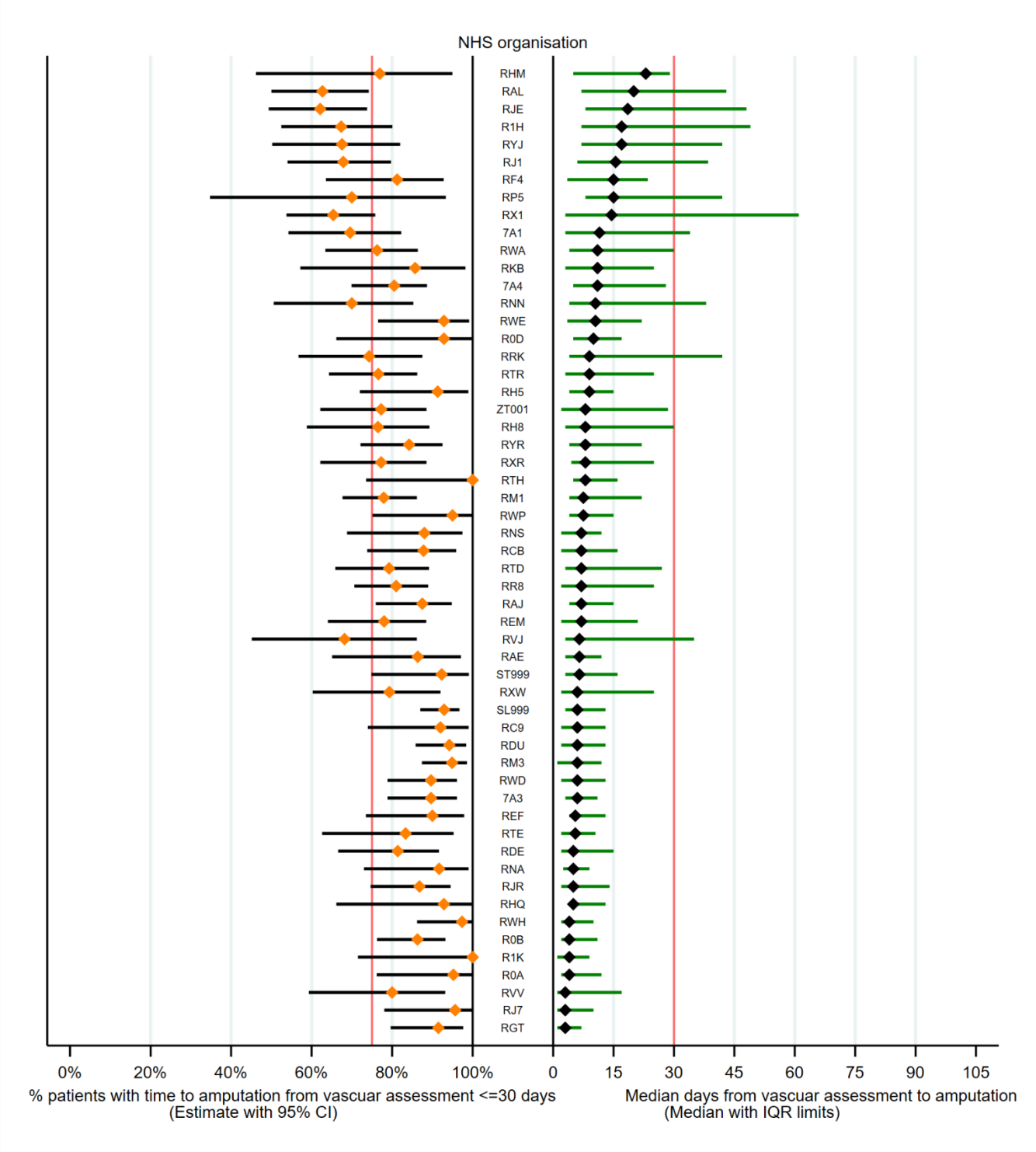
NHS vascular units have to balance the urgency of surgery with the need to optimise patients' condition before their operation. The median time from vascular assessment to amputation in 2025 was:

- 8 days (IQR: 3 to 21 days) for non-elective patients,
- 29 days (IQR: 9 to 94 days) for elective patients, and
- 9 days (IQR: 3 to 28 days) for all patients.

Figure 3.1 describes the times from vascular assessment to amputation by NHS trust for patients admitted non-electively in 2025. Among the 25% of patients at each trust who have the longest waits, there was a considerably greater variation across NHS trusts. At 11 NHS trusts, more than 25% of patients had a wait that exceed 30 days.

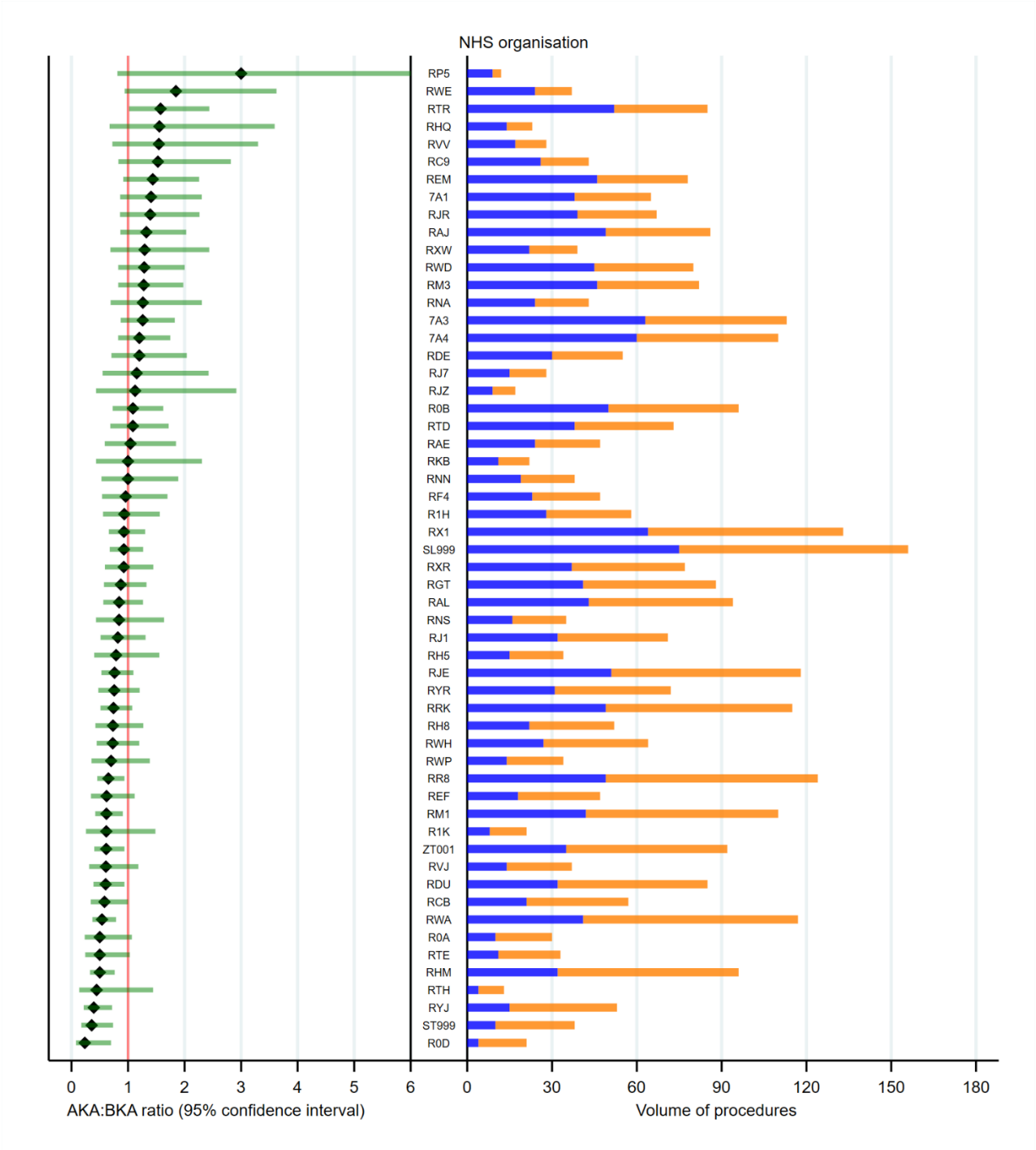
Figure 3.2 describes the volume of activity and the AKA:BKA ratio in 2025, by NHS trust. Nationally, the AKA:BKA ratio was 0.88 (95% CI: 0.83 to 0.94) in 2025. Most of the NHS trusts had a ratio of less than 1 (34 out of 56), whilst 22 units had ratio above one and 1 units had ratio above 2.

Figure 3.1: Median (IQR) time from vascular assessment to non-elective amputation for procedures performed in 2025, by NHS trust[1], together with percentage (95% CI) of patients with time to amputation from vascular assessment <30 days.



[1]Figure presents NHS trusts reporting ≥10 non-elective major amputations in 2025.

Figure 3.2: Volume and ratio of above knee to below knee amputations for procedures performed in 2025, by NHS trust[1]. The blue horizontal line indicates the volume of above knee amputations, and the orange horizontal line shows the volume of below knee amputations.

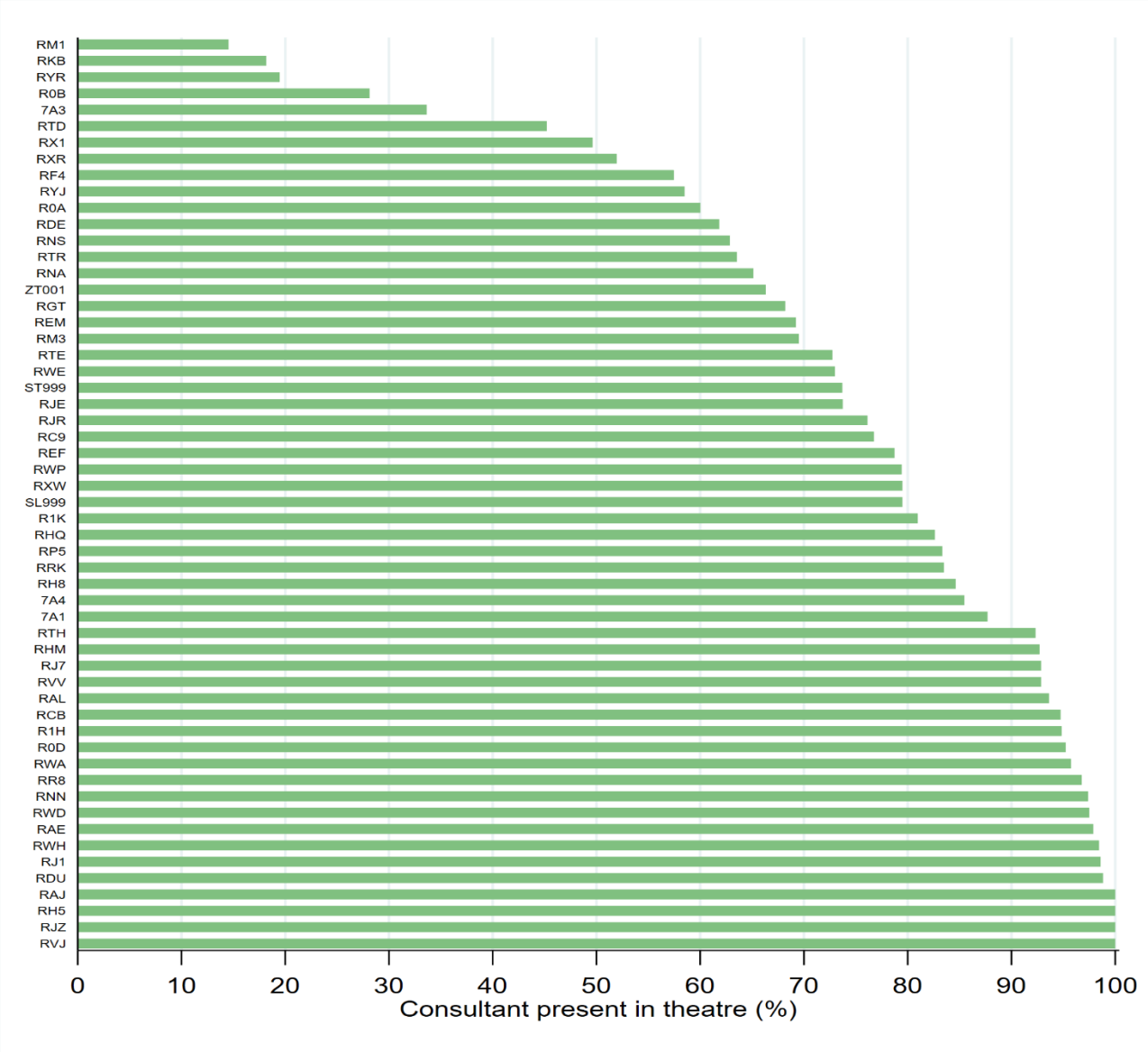


[1]Figure presents NHS trusts reporting ≥10 major amputations in 2025.

Table 3.6: Perioperative care of patients undergoing lower limb major amputation in 2025

	Below knee	%	Above knee	%
Procedures	1,923		1,697	
Mode of admission				
Elective	340	17.7	248	14.6
Non-elective	1,583	82.3	1,449	85.4
Time procedure started				
8am to 6pm	1,745	90.7	1,498	88.3
6pm to midnight	136	7.1	156	9.2
Midnight to 8am	42	2.2	43	2.5
Consultant present in theatre	1,440	74.9	1,235	72.8

Figure 3.3: Percentage of major amputations where a consultant surgeon was present in theatre in 2025, by NHS trust[1]



[1]Figure presents NHS trusts reporting ≥10 lower limb major amputations performed in 2025

3.4 In-hospital outcomes following major amputation

Patient outcomes immediately following a major lower limb amputation are summarised in Table 3.7. The overall rate of in-hospital death in 2025 was 5.7% (95% CI: 4.9% to 6.5%), significantly lower than the rate of 7.0% (95% CI: 6.2% to 7.8%) in 2024 and 2023.

The overall median length of hospital stay in 2025 associated with major lower limb amputations was 23 days (IQR: 14 to 38).

The 30-day in-hospital mortality was 4.3% (95% CI: 3.7% to 5.1%) in 2025, significantly lower than the rates of 5.8% (95% CI: 5.1% to 6.6%) in 2024 and 5.4% (95% CI: 4.7% to 6.1%) in 2023.

Overall, 25.2% of patients in 2025 suffered at least one of the reported complications following a major amputation, compared with 24.7% in 2024 and 25.7% in 2023.

Table 3.7: Patient outcomes following major lower limb amputations undertaken in 2025

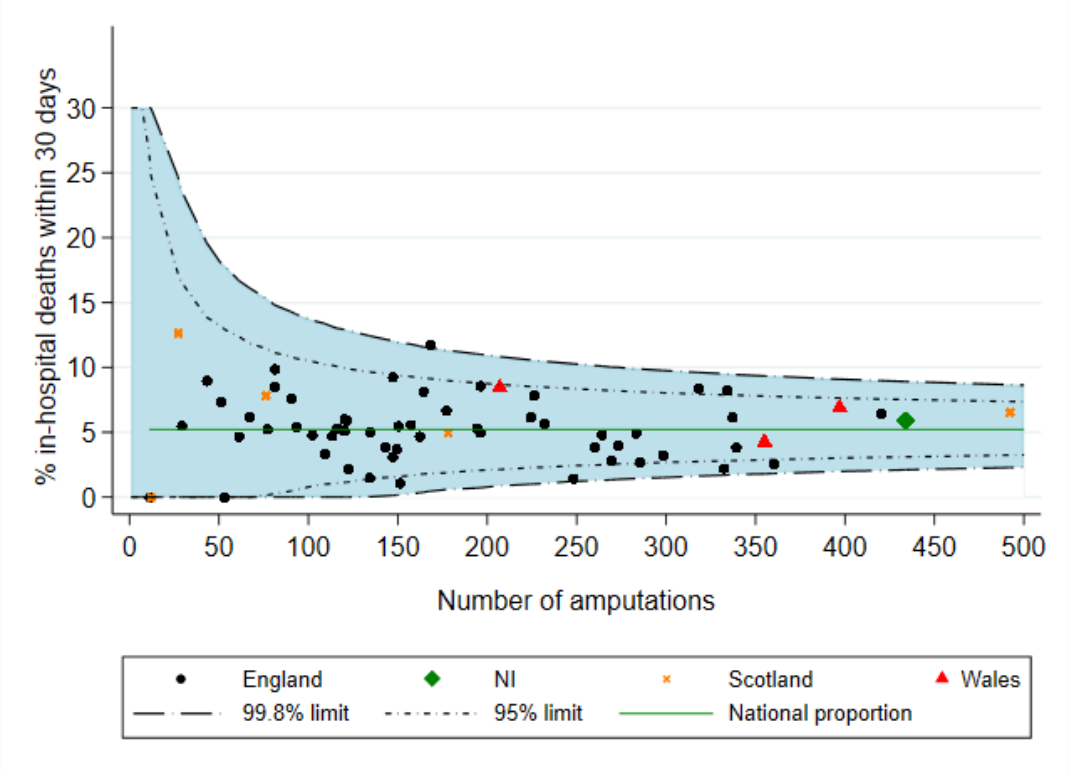
	Below knee		Above knee	
Procedures	1,923		1,697	
Post-op destination				
Ward	1,712	89.1%	1,398	82.4%
Level 2 (HDU/PACU)	132	6.9%	135	8.0%
Level 3 (ICU)	78	4.1%	161	9.5%
	Median	**IQR**	**Median**	**IQR**
Days in level 2 critical care	3	1 to 5.5	2	1 to 6
Days in level 3 critical care	4	3 to 7	4	2 to 8
Overall length of stay (days)	23	14 to 38	23	14 to 38
Postoperative length of stay (days)	15	9 to 25	15	9 to 26
	Rate	**95% CI**	**Rate**	**95% CI**
Overall in-hospital mortality	3.8	2.9 to 4.7	7.9	6.6 to 9.3
30-day in-hospital mortality	2.8	2.1 to 3.6	6.2	5.1 to 7.5
Procedure complications				
Respiratory	3.6	2.8 to 4.5	6.5	5.4 to 7.8
Cardiac	2.4	1.8 to 3.2	3.6	2.8 to 4.6
Limb ischaemia	2.4	1.8 to 3.2	2.4	1.7 to 3.3
Renal failure	1.1	0.7 to 1.7	2.5	1.8 to 3.3
Surgical site infection	4.0	3.2 to 5.0	3.6	2.8 to 4.6
Postoperative confusion	2.2	1.6 to 2.9	3.3	2.5 to 4.3
Haemorrhage	0.5	0.2 to 1.0	0.4	0.2 to 0.8
Cerebral	0.4	0.1 to 0.7	0.8	0.4 to 1.3
No defined complications	75.9	73.9 to 77.8	73.5	71.3 to 75.6
Return to theatre	10.0	8.7 to 11.5	6.8	5.7 to 8.1
Re-admission to higher level care	2.1	1.5 to 2.8	2.4	1.7 to 3.3

Table 3.8: Patient outcomes following major lower limb amputation performed in 2025

	Admission-to-procedure ≤5 days		Admission-to-procedure >5 days	
	No.		**No.**	
Procedures	1,962	54.2%	1,657	45.8%
Days in critical care	**Median**	**IQR**	**Median**	**IQR**
Level 2	2	1 to 5.5	2	1 to 6
Level 3	4	2 to 8	4	3 to 11
Overall length of stay (days)	16	10 to 25	33	22 to 51
Post-op length of stay (days)	14	8 to 22	17	11 to 29
	Rate	**95% CI**	**Rate**	**95% CI**
Overall in-hospital mortality	4.9	3.9 to 5.9	6.7	5.5 to 8.0
30-day in-hospital mortality	4.0	3.2 to 5.0	4.7	3.7 to 5.9
No defined complications	75.0	73.0 to 76.9	74.5	72.3 to 76.6
Return to theatre	8.2	7.0 to 9.5	8.9	7.6 to 10.4
Re-admission to higher level care	2.0	1.5 to 2.8	2.5	1.8 to 3.4

For elective cases, the rates were adjusted for age, ASA grade (1-3 vs 4-5), level of amputation (below or above the knee), and comorbid chronic renal disease. For non-elective cases, the risk adjustment model also included comorbid ischaemic heart disease and active/managed cancer.

Figure 3.4: Risk-adjusted 30-day in-hospital death rate following major amputation for procedures undertaken during January 2023 and December 2025[1], shown in comparison to the three-year overall national average of 5.2%



[1]Figure presents NHS trusts reporting ≥10 major lower limb amputations between January 2023 and December 2025.

3.5 Discharge and follow-up

Table 3.9: Discharge and follow-up of patients undergoing lower limb amputations in 2025, among patients discharged alive

	Below knee (n=1,775)	%	Above knee (n=1,532)	%
Wound healed at 30 days*	549	76.8	505	86.0
Referred to rehabilitation/limb fitting	1,540	87.5	1,135	74.6
Re-admission within 30 days*	198	11.2	158	10.3

* Figures calculated from patient records with available follow-up data

4. Repair of elective infra-renal abdominal aortic aneurysm

4.1 Background

An abdominal aortic aneurysm (AAA) is the local expansion of the abdominal aorta. The condition tends not to produce symptoms until the aneurysm ruptures. Most aneurysms occur below the kidneys (i.e., are infra-renal).

The organisation of vascular services undertaking AAA repair continues to evolve. The number of NHS vascular units performing any AAA repairs decreased from 66 in 2023 to 62 in 2025.

Table 4.1: Estimated case ascertainment of elective infra-renal AAA repairs*

	2023	2024	2025
Audit procedures	2,826	2,661	2,112
NVR HES Equivalent Procedures	3,201	3,046	2,600
Expected procedures	3,270	3,162	3,053
Estimated case ascertainment	98%	96%	85%

*The numbers NVR-HES Equivalent Procedures are larger than the numbers in the rest of this chapter. This is because it includes fenestrated or branched procedures for infra-renal or juxta-renal AAAs (with an infra-renal OPCS code) in order to directly compare with the HES data.

Table 4.2: Estimated case ascertainment rates in 2025 by UK country

	Elective infra-renal AAA repair
England	85%
Wales	>100%
Scotland	63%
Northern Ireland	98%

Table 4.3: Split of open and endovascular elective infra-renal AAA procedures by year

Year	Open	EVAR	Total	% EVAR
2023	1,069	1,757	2,826	62.2
2024	986	1,675	2,661	62.9
2025	729	1,383	2,112	65.5
Total	2,784	4,815	7,599	63.4

Figure 4.1: Distribution of elective infra-renal AAA repairs by age group between 2023 and 2025

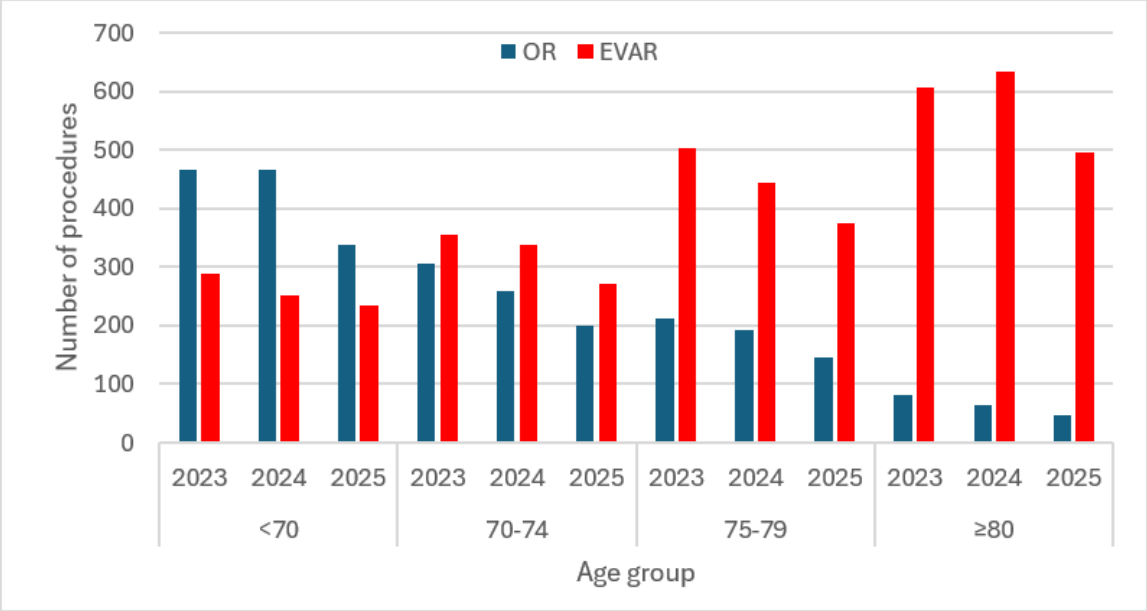
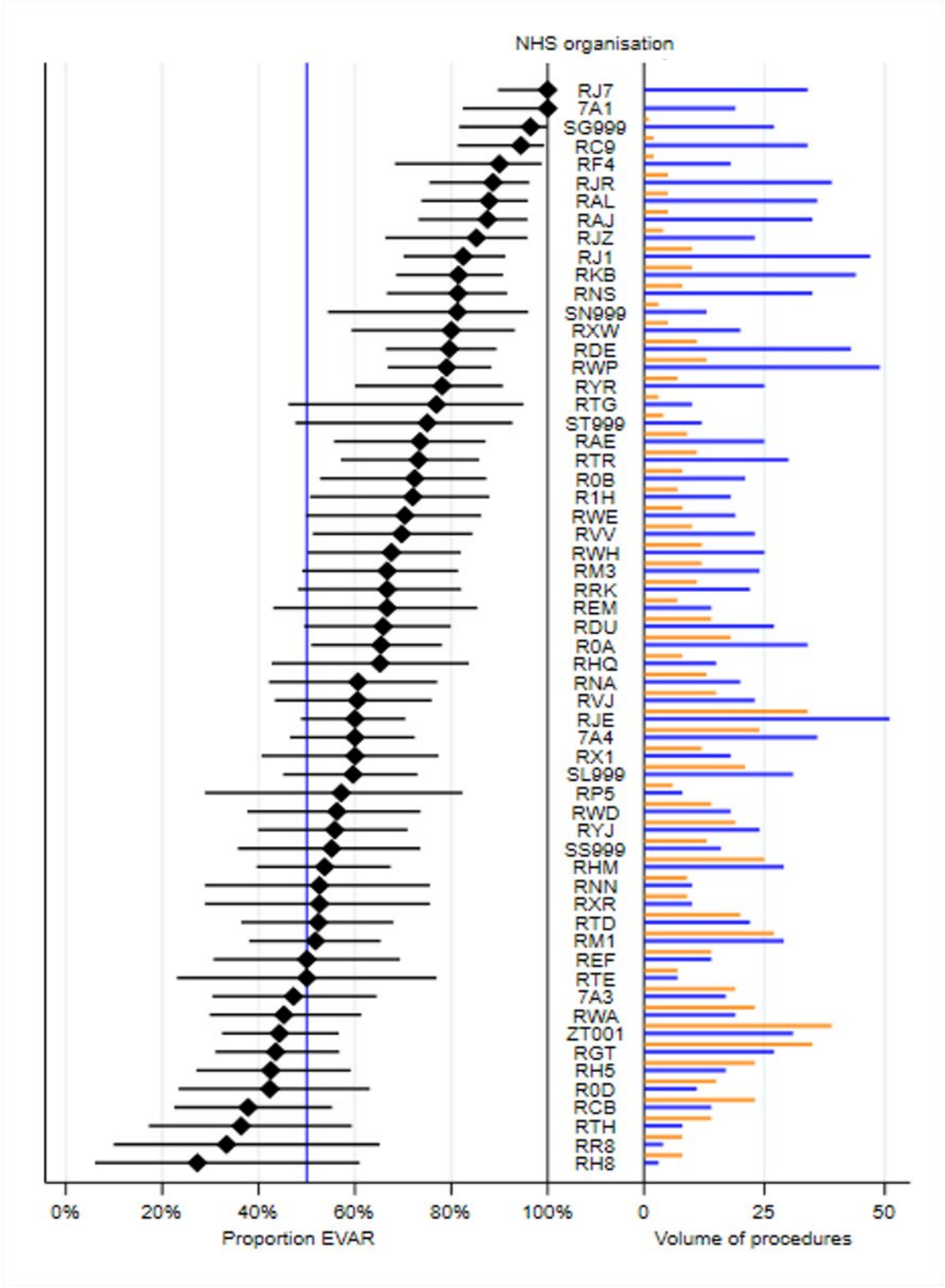


Figure 4.2: Percentage of EVARs (left panel: the black horizontal bars depict their 95% confidence intervals) and number of open repairs and EVARs (right panel) by NHS trust in 2025 with at least 10 procedures. Orange bars show open repairs and blue bars show EVARs. Ten of the 59 (17%) Trusts were performing more open repairs than EVARs.



4.2 Patient Characteristics

Table 4.4: Characteristics of patients who had elective infra-renal AAA repair between January and December 2025

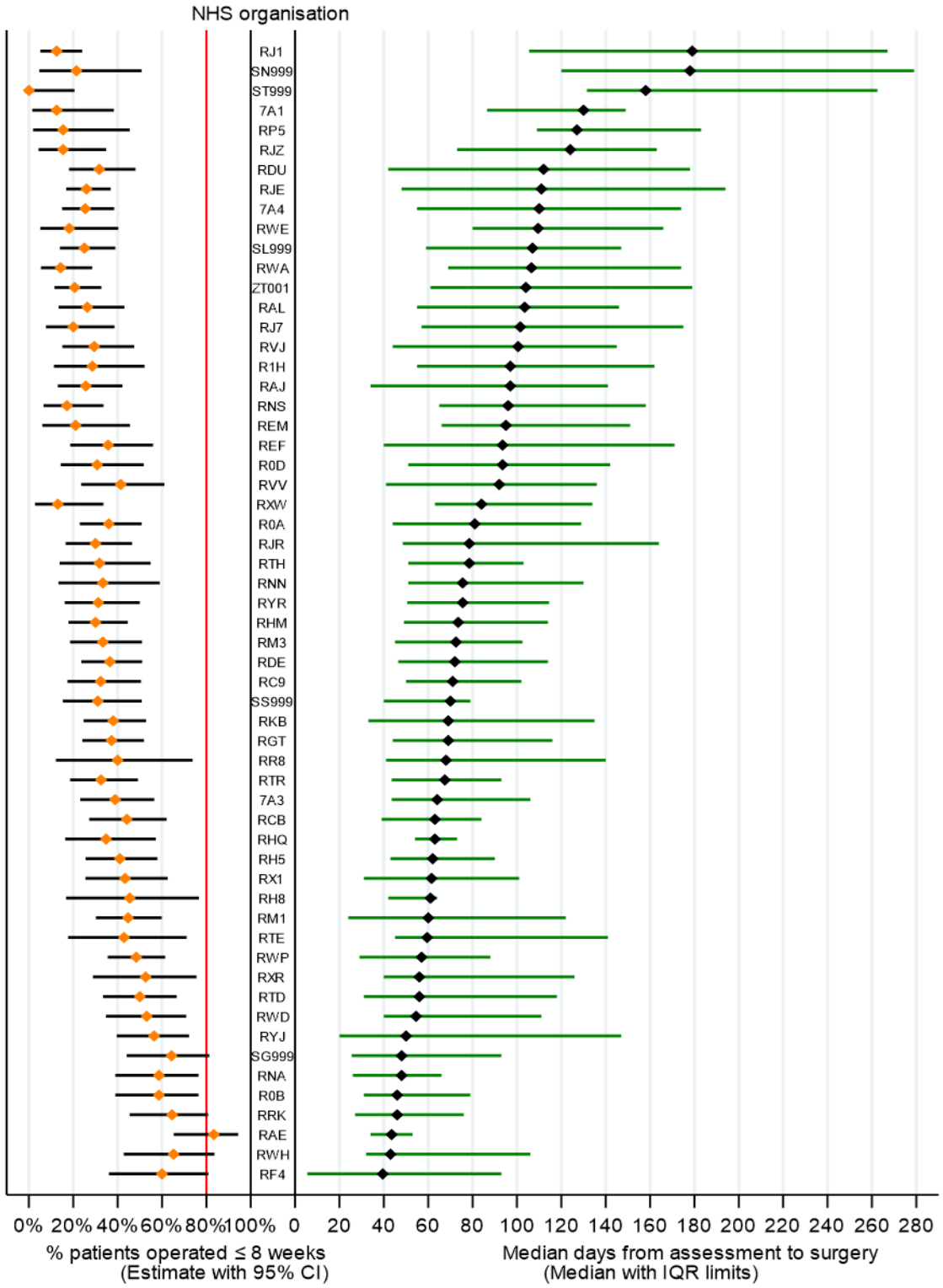
		Open repair	%	EVAR	%	Total
Total procedures		729		1,383		2,112
Age group (years)	Under 66	185	25.4	110	8.0	295
	66 to 75	398	54.7	456	33.1	854
	76 to 85	142	19.5	684	49.6	826
	86 and over	<5	0.3	129	9.4	131
Male		671	92	1260	91.1	1931
Female		58	8	123	8.9	181
Current smoker		197	27.0	264	19.1	461
Previous AAA surgery		<5	0.4	83	6.0	86
Indication	Screen detected	436	62.6	613	49.7	1,049
	Non-screen	180	25.9	422	34.2	602
	Other	80	11.5	199	16.1	279
AAA diameter (cm)	Under 5.5	64	8.8	215	15.5	279
	5.5 to 6.9	594	81.5	1,015	73.4	1,609
	7.0 and over	71	9.7	153	11.1	224
ASA fitness grade	1,2	180	24.7	196	14.2	376
	3	528	72.4	1,092	79	1,620
	4,5	21	2.9	95	6.9	116
Comorbidities	Hypertension	471	64.6	940	68.0	1,411
	Ischemic heart disease	167	22.9	436	31.5	603
	Chronic heart failure	20	2.7	126	9.1	146
	Stroke	44	6	116	8.4	160
	Diabetes	109	15	278	20.1	387
	Chronic renal failure	82	11.2	236	17.1	318
	Chronic lung disease	166	22.8	403	29.1	569

4.3 Pre-operative pathway for elective infra-renal aneurysms

Table 4.5: Overall compliance with standards related to the VSGBI elective AAA care pathway

	Percentage of patients meeting standard		
	2025	**2024**	**2023**
Elective patients were discussed at MDT meetings	1,905/2,112 (90.2%)	85.6%	86.3%
Patients with an AAA diameter ≥5.5cm deemed suitable for repair had a preoperative CT/MR angiography assessment	1,728/1,833 (94.3%)	93.5%	93.0%
Patients underwent a formal anaesthetic review	1,994/2,112 (94.4%)	96.5%	97.5%
Patients whose anaesthetic review was done by a consultant vascular anaesthetist	1,800/1,993 (90.3%)	91.4%	90.4%
Patients who had their fitness measured	1,777/2,108 (84.3%)	85.6%	83.6%
Most common assessment methods:			
CPET	1,081/1,777 (60.8%)	56.0%	56.7%
Echocardiogram	811/1,777 (45.6%)	46.8%	45.9%

Figure 4.3: Median (IQR) time from assessment to treatment (days) for patients who had elective infra-renal AAA repair between January and December 2025 (black diamonds) among the 58 NHS organisations with 10 or more AAA repairs. The national median was: 78 (IQR 43 - 136) days. Left panel shows proportion seen within 8 weeks of assessment; 35% nationally (orange diamonds). The grey horizontal bars depict their 95% confidence intervals. The red line shows the 80% target indicated by NAAASP.



4.4 Postoperative outcomes after elective infra-renal AAA repair

Table 4.6: Postoperative details of elective infra-renal repairs undertaken in 2025. Overall combined deaths was 1.2% (95%CI: 0.8 - 1.8).

		Open repair (n=729)		EVAR (n=1,383)	
Admitted to	Ward	2.3%		65.1%	
	Level 2	57.5%		31.1%	
	Level 3	39.8%		3.8%	
	Died in theatre	0.4%		0.0%	
		Median	***IQR***	***Median***	***IQR***
Days in critical care:	Level 2	3	2 to 4	1	1 to 2
	Level 3	3	2 to 5	1	1 to 2
Post-op length of stay (days)		7	6 to 10	1	1 to 2
		Rate	***95% CI***	***Rate***	***95% CI***
In-hospital postoperative mortality		2.7	1.7 to 4.2	0.4	0.2 to 0.9
Defined complications					
	Cardiac	3.3	2.1 to 4.9	0.5	0.2 to 1.0
	Respiratory	9.1	7.1 to 11.4	0.9	0.4 to 1.5
	Haemorrhage	1.5	0.8 to 2.7	0.9	0.5 to 1.6
	Limb ischaemia	2.9	1.8 to 4.4	0.4	0.2 to 0.9
	Renal failure	2.2	1.3 to 3.6	0.3	0.1 to 0.7
	Other	11.3	9.1 to 13.8	3.6	2.7 to 4.7
	None of the above	73.3	69.9 to 76.5	93.6	92.2 to 94.9
Return to theatre		7.3	5.5 to 9.4	1.7	1.1 to 2.5
Readmission within 30 days		6.2	4.5 to 8.2	5.2	4.1 to 6.5

Table 4.7: Postoperative details of endoleaks following elective endovascular repairs

Endoleak type	2023	2024	2025	Total
No endoleak	1,360	1,293	1,113	3,766
Type 1	90	85	62	237
Type 2	226	228	155	609
Type 3	9	7	6	22
Type 4	5	<5	<5	7
Unclassified	6	11	9	26
Missing	61	50	37	148
Total	1,757	1,675	1,383	4,815

4.5 Postoperative in-hospital mortality for elective infra-renal AAA repair

Figure 4.4: Risk-adjusted in-hospital mortality rates after elective infra-renal AAA repair among NHS vascular units (January 2023 and December 2025). The overall in-hospital mortality rate was 1.3%.

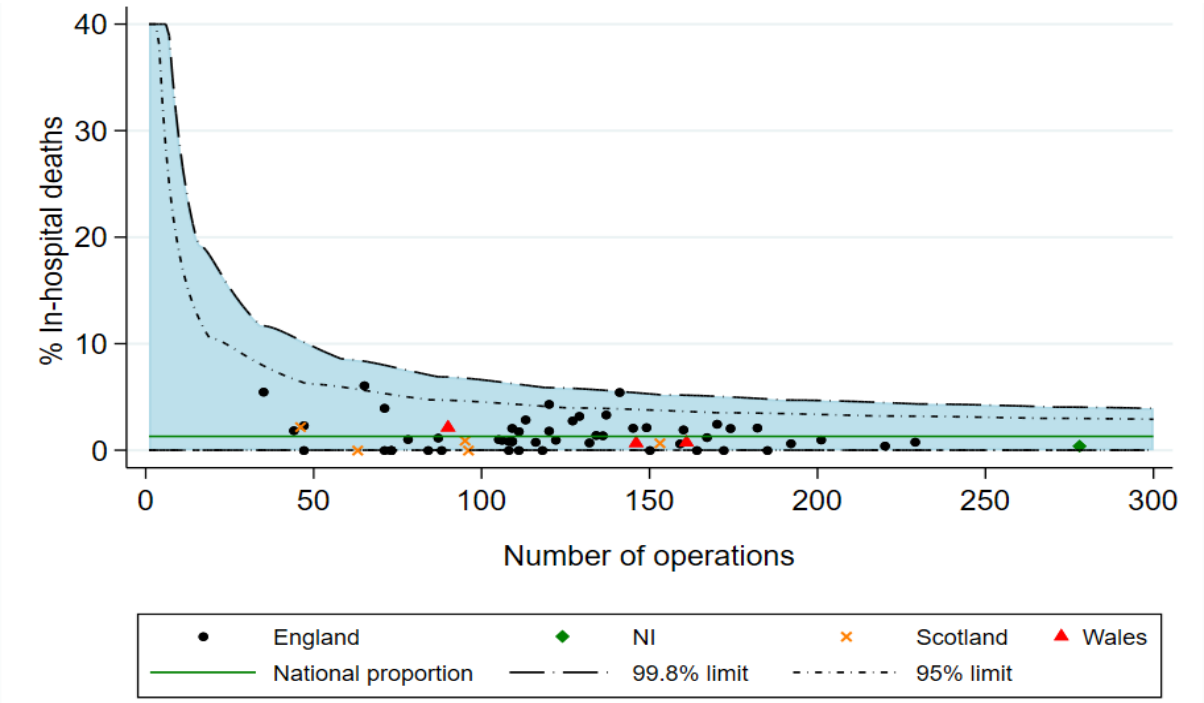
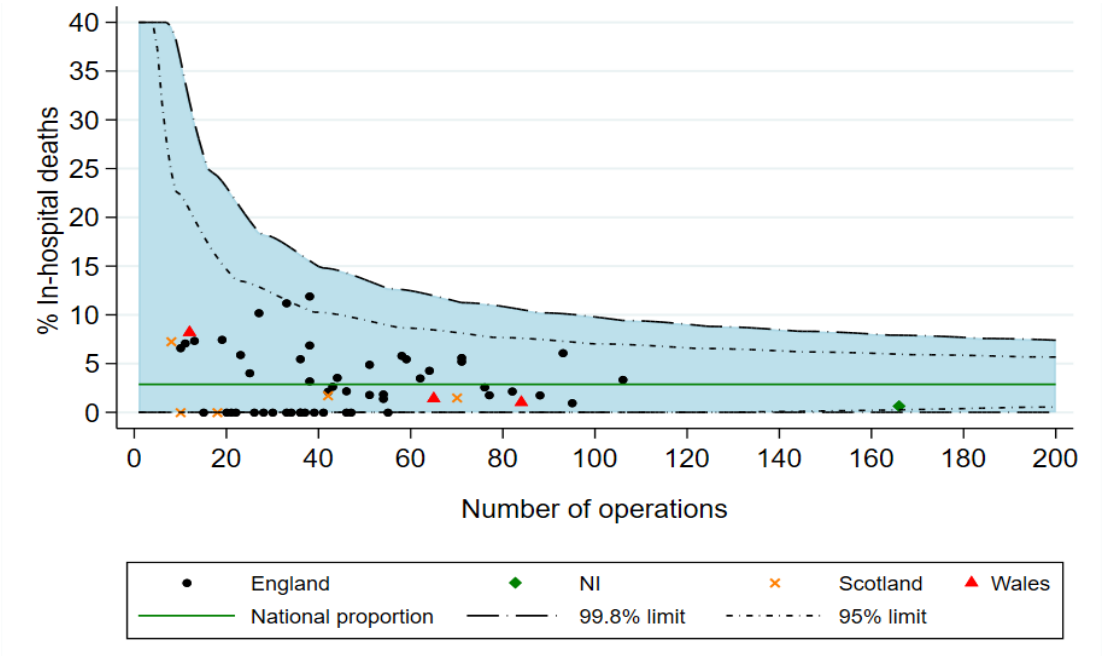


Figure 4.5: Funnel plot of risk-adjusted in-hospital mortality after elective open AAA repair for procedures performed between 2023 and 2025.



The postoperative in-hospital mortality rate for open repair procedures was 2.9%

5. Other elective repair of aortic conditions

5.1 Background

Aneurysms can occur at various locations along the aorta. In addition to infra-renal aneurysms, a distinction is made between three other types:

- juxta-renal (that occur near to the renal arteries)
- supra-renal (that occur above the renal arteries), and
- thoraco-abdominal (more extensive aneurysms involving the thoracic and abdominal aorta).

Table 5.1: Types of other elective procedures undertaken between January 2023 and December 2025

Other elective procedures		No. of procs	%
Total procedures		1,600	
Type of procedure	FEVAR	1,258	78.6
	BEVAR	319	19.9
	Other	23	1.4

5.2 Patient Characteristics

Table 5.2: Characteristics of patients who had other primary open elective and endovascular repairs between January 2023 and December 2025

Other elective procedures		Open repair	%	Endovascular	%	Total
Total procedures		229		1,600		1,829
Age group (years)	Under 66	64	27.9	178	11.1	242
	66 to 75	110	48.0	652	40.8	762
	76 to 85	55	24.0	732	45.8	787
	86 and over	0	0.0	36	2.3	36
Male		201	87.8	1,384	86.5	1,585
Female		28	12.2	216	13.5	244
Current smoker		63	27.5	364	22.9	427
AAA diameter (cm)	Under 5.5	10	4.4	76	4.8	86
	5.5 to 6.9	166	72.5	1,181	74.5	1,347
	7.0 and over	53	23.1	329	20.7	382
ASA fitness grade	1,2	49	21.4	251	15.7	300
	3	152	66.4	1,236	77.5	1,388
	4,5	28	12.2	108	6.8	136
Comorbidities	Hypertension	158	69.0	1,158	72.6	1,316
	Ischemic heart disease	65	28.4	564	35.4	629
	Chronic heart failure	<5	1.7	108	6.8	112
	Stroke	17	7.4	131	8.2	148
	Diabetes	38	16.6	272	17.1	310
	Chronic renal failure	25	10.9	294	18.4	319
	Chronic lung disease	52	22.7	562	35.2	614

Table 5.3: Postoperative details of other elective repairs undertaken between January 2023 and December 2025

Other elective procedures		**Open repair (n=229)**		**Endovascular (n=1,600)**	
Admitted to	Ward	1.7%		23.3%	
	Level 2	38.4%		57.0%	
	Level 3	59.8%		19.6%	
	Died in theatre	0.0%		0.1%	
		Median	***IQR***	***Median***	***IQR***
Days in critical care: Level 2		4	2 to 7	2	1 to 3
Level 3		3	2 to 5	2	1 to 4
Post-op length of stay (days)		9	7 to 14	4	2 to 6
		Rate	***95% CI***	***Rate***	***95% CI***
In-hospital postoperative mortality		9.6	6.1 to 14.2	1.8	1.2 to 2.6
Return to theatre		10.0	6.5 to 14.7	4.8	3.8 to 5.9
Readmission within 30 days		12.6	8.4 to 17.9	7.4	6.2 to 8.8

5.3 Repair of thoracic aortic conditions

Table 5.4: Characteristics of patients who had TEVARs between January 2023 and December 2025

TEVARs		Elective	%	Non-elective	%	Total
Total procedures		442		434		876
Age group (years)	Under 66	107	24.2	194	44.9	301
	66 to 75	171	38.7	121	28.0	292
	76 to 85	148	33.5	103	23.8	251
	86 and over	16	3.6	14	3.2	30
Male		281	63.6	276	63.6	557
Female		161	36.4	158	36.4	319
Current smoker		78	17.8	128	30.1	206
AAA diameter (cm)	Under 5.5	118	26.9	276	67.6	394
	5.5 to 6.9	246	56.2	76	18.6	322
	7.0 and over	74	16.9	56	13.7	130
ASA fitness grade	1,2	70	15.8	41	9.4	111
	3	337	76.2	167	38.5	504
	4,5	35	7.9	226	52.1	261
Comorbidities	Hypertension	336	76.0	272	63.0	608
	Ischemic heart disease	92	20.8	57	13.2	149
	Chronic heart failure	20	4.5	18	4.2	38
	Stroke	25	5.7	17	3.9	42
	Diabetes	43	9.7	38	8.8	81
	Chronic renal failure	54	12.2	42	9.7	96
	Chronic lung disease	117	26.5	67	15.5	184
Indication	Asymptomatic	316	71.5	28	6.5	344
	Symptomatic unruptured	37	8.4	94	21.7	131
	Ruptured	0	0.0	79	18.2	79
	Transection	<5	0.7	59	13.6	62
	Acute dissection	16	3.6	145	33.4	161
	Chronic dissection	67	15.2	26	6.0	93
	Missing	<5	0.7	<5	0.7	6

Table 5.5: Postoperative details of TEVARs undertaken between January 2023 and December 2025

TEVARS		Elective (n=442)		Non-elective (n=434)	
Admitted to	Ward	31.0%		8.9%	
	Level 2	51.6%		39.4%	
	Level 3	17.4%		49.9%	
	Died in theatre	0.0%		1.9%	
		Median	***IQR***	***Median***	***IQR***
Days in critical care:	Level 2	2	1 to 3	3	2 to 5
	Level 3	3	2 to 6	5	3 to 12
Post-op length of stay (days)		3	2 to 7	9	5 to 20
		Rate	***95% CI***	***Rate***	***95% CI***
In-hospital postoperative mortality		1.6	0.6 to 3.2	12.2	9.3 to 15.7
Return to theatre		4.1	2.4 to 6.4	16.2	12.9 to 20.1
Readmission within 30 days		10.2	7.5 to 13.4	8.4	5.8 to 11.7

5.4 Patients with unruptured AAA admitted as an emergency procedure

There are a group of patients with an unruptured AAA who are admitted as an emergency admission. There are also some patients which can be entered under an emergency operative procedure but are recorded under an elective admission mode. During the period between 2023 and 2025, the NVR received details of 1,281 such cases.

Table 5.6: Characteristics of patients who had non-ruptured emergency open and endovascular repairs between January 2023 and December 2025

		Open repair	%	Endovascular	%	Total
Total procedures		556		725		1,281
Age group (years)	Under 66	169	30.6	73	10.1	242
	66 to 75	215	38.9	194	26.8	409
	76 to 85	160	28.9	358	49.4	518
	86 and over	9	1.6	99	13.7	108
Male		464	83.5	611	84.3	1075
Female		92	16.5	114	15.7	206
Current smoker		190	34.2	159	22	349
AAA diameter (cm)	Under 5.5	85	15.3	151	20.9	236
	5.5 to 6.9	243	43.8	277	38.3	520
	7.0 and over	227	40.9	295	40.8	522
ASA fitness grade	1,2	100	18.0	73	10.1	173
	3	336	60.4	453	62.5	789
	4,5	120	21.6	199	27.4	319

Table 5.7: Postoperative details of non-ruptured emergency open and endovascular repairs undertaken between January 2023 and December 2025. The overall in-hospital mortality rate for this patient group was 4.4% (95% CI 3.4 to 5.7).

		Open repair (n = 556)		Endovascular (n = 725)	
Admitted to	Ward	2.2%		59.9%	
	Level 2	43.0%		29.4%	
	Level 3	54.7%		10.5%	
	Died in theatre	0.2%		0.1%	
		Median	***IQR***	***Median***	***IQR***
Days in critical care:	Level 2	3	2 to 5	1	1 to 2
	Level 3	4	2 to 7	2	1 to 4
Post-op length of stay (days)		9	7 to 14	3	2 to 8
		Rate	***95% CI***	***Rate***	***95% CI***
In-hospital postoperative mortality		7.0	5.0 to 9.5	2.5	1.5 to 3.9
Return to theatre		10.5	8.0 to 13.3	2.9	1.8 to 4.4
Readmission within 30 days		8.3	6.1 to 11.1	8.9	6.9 to 11.3

6. Repair of ruptured abdominal aortic aneurysms

6.1 Surgical activity for ruptured AAA

Details of 1,028 procedures were submitted to the NVR in 2023-2025, giving an estimated case ascertainment of 87%.

Table 6.1: Characteristics of patients who had a repair of a ruptured AAA between January 2023 and December 2025

		Open repair	%	EVAR	%	Total
Total procedures		547		481		1,028
Age group (years)	Under 66	103	18.9	58	12.1	161
	66 to 75	160	29.3	109	22.7	269
	76 to 85	261	47.8	239	49.8	500
	86 and over	22	4.0	74	15.4	96
Male		455	83.2	409	85.0	864
Female		92	16.8	72	15.0	164
Previous AAA surgery		22	4.0	84	17.5	106
AAA diameter (cm)	Under 5.5	49	9.1	78	16.4	127
	5.5 to 6.9	127	23.6	150	31.4	277
	7.0 and over	361	67.2	249	52.2	610
ASA fitness grade	1 or 2	22	4.0	20	4.2	42
	3	62	11.3	86	17.9	148
	4	332	60.7	309	64.2	641
	5	131	23.9	66	13.7	197

Figure 6.1: Number of open repairs and EVARs for ruptured AAAs between January 2023 and December 2025.

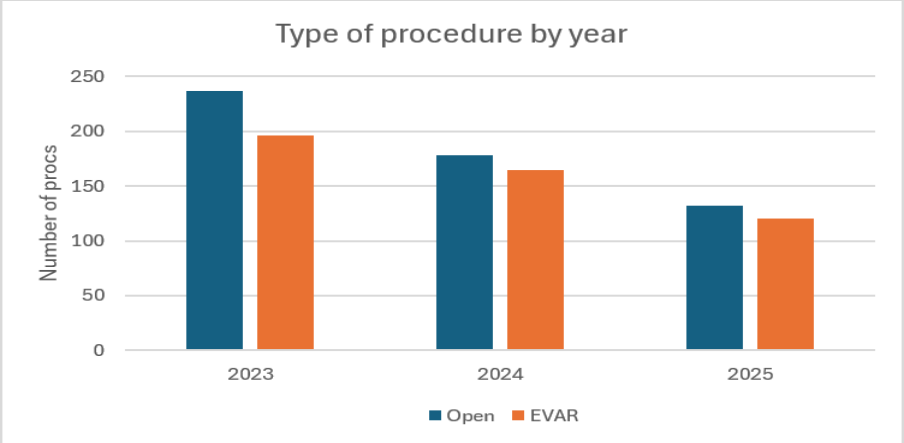


Figure 6.2: Percentage of EVARs (left panel) and number of open repairs and EVARs (right panel) by NHS trust between January 2023 and December 2025 with at least 10 procedures. Orange bars show open repairs and blue bars show EVARs.

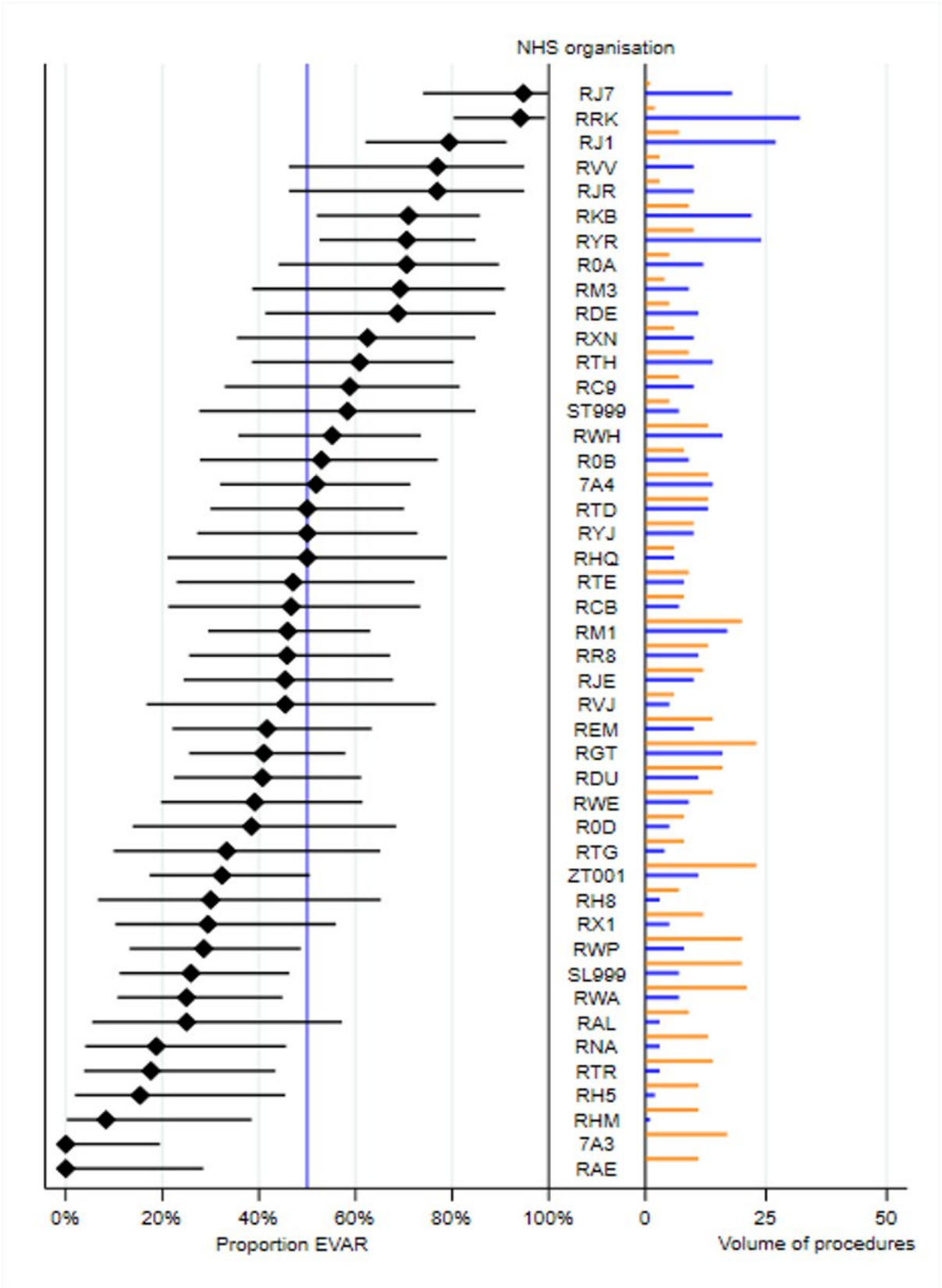
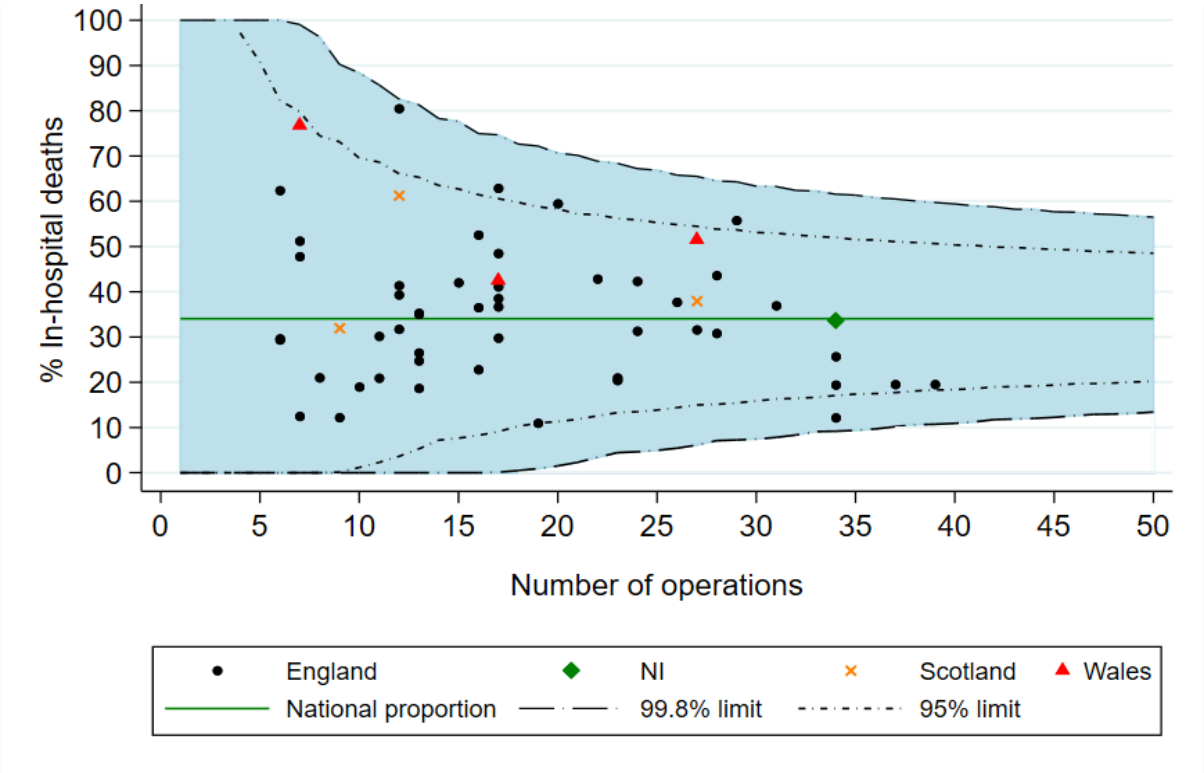


Table 6.2: Postoperative details of emergency repairs for ruptured AAAs undertaken between January 2023 and December 2025

2023 - 2025		**Open repair (n=547)**		**EVAR (n=481)**	
Admitted to	Ward	0.5%		15.7%	
	Level 2	7.5%		33.5%	
	Level 3	82.8%		47.8%	
	Died in theatre	9.1%		2.9%	
		Median	***IQR***	***Median***	***IQR***
Days in critical care: Level 2		5	2.5 to 11.5	2	1 to 4
Level 3		5	2 to 10	3	1 to 5
Post-op length of stay (days)		10	3 to 20	7	4 to 15
Post-op length of stay for patients discharged alive (days)		15	10 to 27	8	4 to 15
		Rate	***95% CI***	***Rate***	***95% CI***
In-hospital postoperative mortality		46.3	42.0 to 50.5	20.2	16.7 to 24.0
Defined complications					
	Cardiac	18.5	15.2 to 22.2	8.6	6.2 to 11.5
	Respiratory	27.0	23.1 to 31.1	14.3	11.3 to 17.9
	Stroke	2.2	1.1 to 3.9	0.6	0.1 to 1.9
	Haemorrhage	3.6	2.2 to 5.7	2.4	1.2 to 4.2
	Limb ischaemia	13.5	10.6 to 16.8	4.9	3.1 to 7.3
	Renal failure	22.9	19.3 to 26.9	9.2	6.7 to 12.2
	Ischaemic bowel	12.7	9.9 to 15.9	1.5	0.6 to 3.1
	None of predefined	28.4	24.4 to 32.6	61.9	57.3 to 66.3
Return to theatre		22.5	18.9 to 26.5	8.1	5.8 to 11.0
Readmission within 30 days		10.2	7.0 to 14.2	10.2	7.4 to 13.7

6.2 Postoperative in-hospital mortality for ruptured AAA repair

Figure 6.3: Risk-adjusted in-hospital mortality for emergency repairs of ruptured AAAs between January 2023 and December 2025 by NHS trust. The overall mortality rate was 34.0%. All NHS trusts had a risk-adjusted rate of in-hospital postoperative mortality that fell within the expected range around the national average.



7. Carotid endarterectomy

7.1 Background

The information in this chapter focuses primarily on carotid procedures performed within NHS hospitals between 1 January 2025 and 31 December 2025.

Table 7.1: Estimated case ascertainment of carotid endarterectomy in the UK

	2023	2024	2025
Audit procedures	3,402	2,945	2,643
Expected procedures	3,589	3,325	3,306
Estimated case ascertainment	95%	89%	80%

Table 7.2: Estimated case ascertainment rates in 2025 by UK country

	Carotid endarterectomy
England	81%
Wales	>100%
Scotland	48%
Northern Ireland	97%

7.2 Patient and Procedure Characteristics

Table 7.3: Characteristics of patients who had carotid endarterectomy in 2025, compared with characteristics from 2023 and 2024

Patient characteristics	No. of procedures	2025 %	2024 %	2023 %
Total procedures	2,643			
Age (years), (n=2,634)				
Under 66	772	29.3	27.0	29.4
66 to 75	984	37.4	36.5	35.5
76 to 85	789	30.0	32.2	31.1
86 and over	89	3.4	4.3	4.0
Male	1,846	69.8	69.6	68.5
Female	797	30.2	30.4	31.5
Asymptomatic	150	5.7	5.5	5.8
Patients symptomatic for carotid disease				
Index symptom if symptomatic: (n=2,493)				
Stroke	1,026	41.2	41.7	40.6
TIA	1,091	43.8	42.6	43.1
Amaurosis fugax	335	13.4	13.9	14.3
None of the three above	41	1.6	1.8	2.1
Grade of ipsilateral carotid stenosis* (n=2,643)				
<50%	51	1.9	1.3	1.2
50-69%	651	24.6	28.2	27.4
70-89%	1,033	39.1	39.7	40.6
90-99%	902	34.1	30.6	30.5
Occluded	6	0.2	0.2	0.2
Rankin score prior to surgery (n=2,642)				
0-2	2,407	91.1	90.9	92.0
3	215	8.1	8.4	7.6
4-5	20	0.8	0.7	0.4
Comorbidities (n=2,642)				
Diabetes	682	25.8	25.4	25.0
Cardiac disease	642	24.3	25.2	25.9

* level of stenosis recorded at the time of initial imaging.

Table 7.4: Operative details of carotid endarterectomies performed from 2023 to 2025

Operation details		Procedures (n=2,643)	2025 %	2024 %	2023 %
Anaesthetic	General	1,951	73.8	69.9	65.5
	GA + block	293	11.1	12.3	12.2
	Block or regional	277	10.5	13.2	16.5
	Local	122	4.6	4.5	5.8
Type of endarterectomy	Standard	186	7.0	7.7	8.9
	Standard + patch	2,361	89.3	88.4	86.4
	Eversion	96	3.6	3.9	4.7
Carotid shunt used		1,882	71.3	67.2	65.9
Ipsilateral patency check		1,929	74.9	72.5	69.6

7.3 Treatment pathways

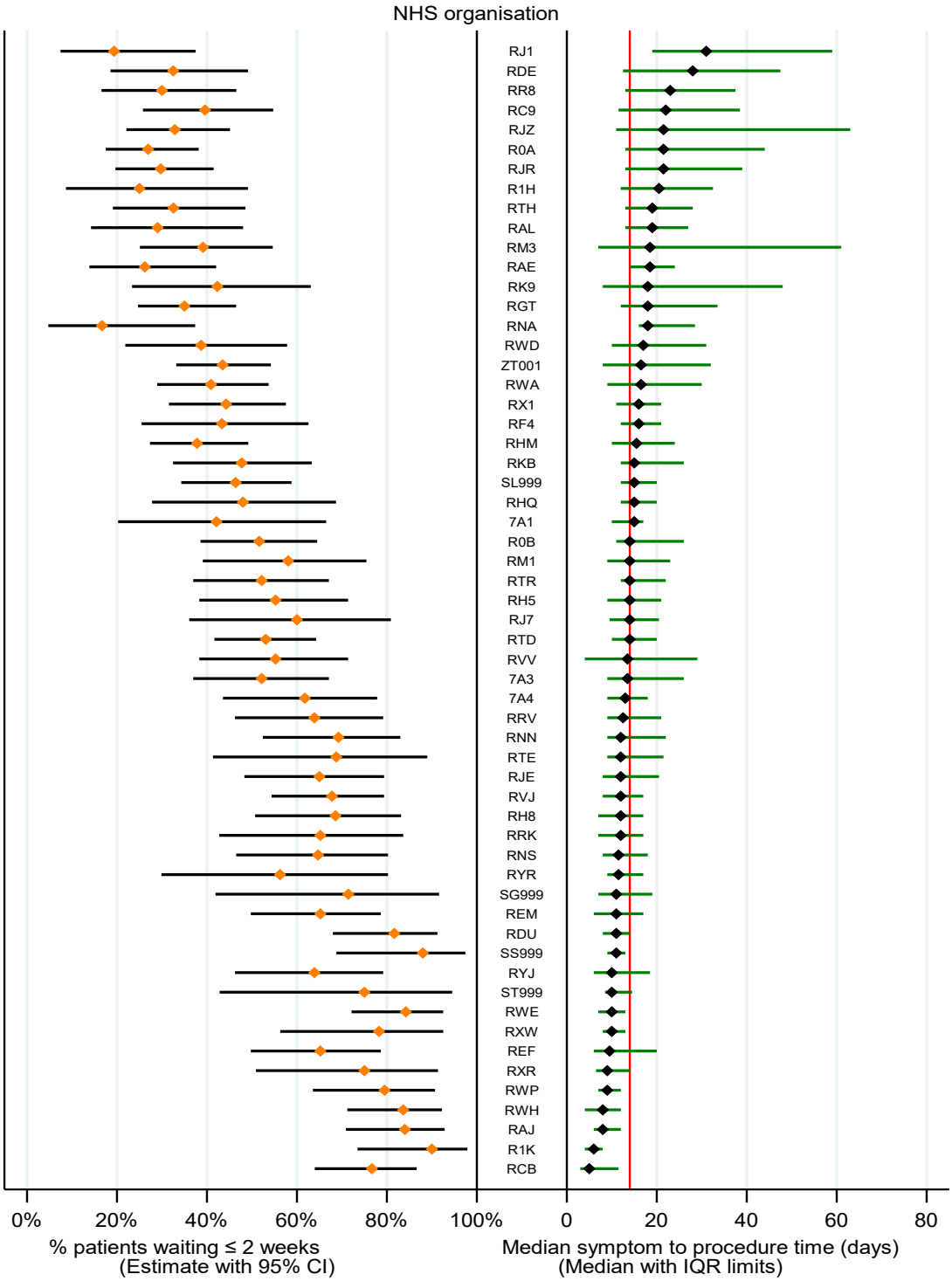
Table 7.5: Source of referral

Source of referral	Procedures (n=2,643)	2025 %
GP	40	1.5
Neurologist	62	2.3
Stroke Physician	2,334	88.3
Radiologist	<5	0.1
Care of Elderly Consultant	23	0.9
Vascular Surgeon	77	2.9
Cardiologist or Cardiothoracic Surgeon	18	0.7
Ophthalmologist	44	1.7
Self-Referral	7	0.3
Other Surgeon	23	0.9
Other	13	0.5

Table 7.6: Waiting times amongst symptomatic patients

Metric	Procedures 2025 (n=2,493)
Symptom to first medical referral	4 (1 - 9)
First medical referral to being seen by vascular team	1 (0 - 5)
Seen by the vascular team to undergoing CEA	6 (3 - 10)
Symptom onset to surgery	14 (9 - 24)

Figure 7.1: Median time (and interquartile range) from symptom to procedure by NHS trust for procedures performed between January and December 2025 (black diamonds) and proportion waiting less than 2 weeks following symptoms (orange diamonds). Fifty-two percent were seen within 14 days.



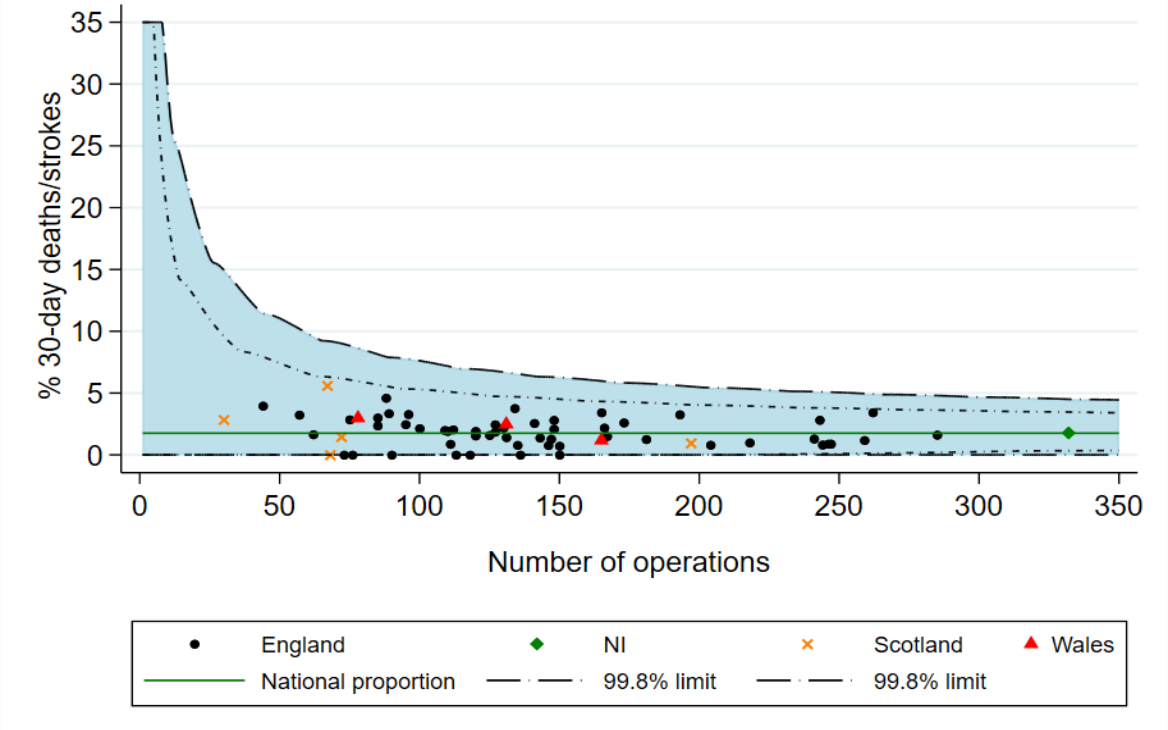
7.4 Outcomes after carotid endarterectomy

Table 7.7: Postoperative outcomes following carotid endarterectomy for 2025

Procedures	**2,643**
Complication	**Complication rate (%) 2025**
Death and/or stroke within 30 days	1.7 (1.2 – 2.3)
Stroke within 30 days	1.2 (0.8 – 1.7)
Death within 30 days	0.6 (0.3 – 1.0)
Bleeding within admission	2.0 (1.5 – 2.6)
Myocardial infarction within admission	0.8 (0.5 – 1.2)
Cranial nerve injury within admission	1.7 (1.2 – 2.2)
TIA within admission	0.2 (0.1 – 0.4)
Post-operative confusion within admission	0.5 (0.3 – 0.9)

7.5 Rates of stroke/death within 30 days among NHS trusts

Figure 7.2: Funnel plot of risk-adjusted rates of stroke/death within 30 days for NHS trusts, for carotid endarterectomies between January 2023 and December 2025



The overall national average rate of stroke/death within 30 days = 1.8%

- the median length of stay was 2 days (IQR: 1 to 4 days)
- the rate of return to theatre was 2.7% (95% CI 2.1 to 3.4), and
- the rate of readmission within 30 days was 5.5% (95% CI 4.6 to 6.4).

Appendix 1: NHS organisations that perform vascular procedures

Code	Organisation Name	AAA	CEA	Angio	Bypass	Amp
7A1	Betsi Cadwaladr University Health Board	Yes	Yes	Yes	Yes	Yes
7A3	Swansea Bay University Health Board	Yes	Yes	Yes	Yes	Yes
7A4	Cardiff and Vale University Health Board	Yes	Yes	Yes	Yes	Yes
7A6	Aneurin Bevan University Health Board	No	No	Yes	No	No
R0A	Manchester University NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
R0B	South Tyneside and Sunderland NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
R0D	University Hospitals Dorset NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
R1H	Barts Health NHS Trust	Yes	Yes	Yes	Yes	Yes
R1K	London North West University Healthcare NHS Trust	No	Yes	Yes	Yes	Yes
RA7	University Hospitals Bristol and Weston NHS Foundation Trust	No	No	Yes	No	No
RA9	Torbay and South Devon NHS Foundation Trust	No	No	Yes	No	Yes
RAE	Bradford Teaching Hospitals NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RAJ	Mid and South Essex NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RAL	Royal Free London NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RAX	Kingston Hospital NHS Foundation Trust	No	No	Yes	No	No
RBD	Dorset County Hospital NHS Foundation Trust	No	No	Yes	No	No
RBN	Mersey and West Lancashire Teaching Hospitals NHS Trust	No	No	Yes	No	No
RBQ	Liverpool Heart And Chest NHS Foundation Trust	Yes	No	No	No	No
RC9	Bedfordshire Hospitals NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RCB	York and Scarborough Teaching Hospital NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RD8	Milton Keynes University Hospital NHS Foundation Trust	No	No	Yes	No	No
RDE	East Suffolk and North Essex NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RDU	Frimley Health NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
REF	Royal Cornwall Hospitals NHS Trust	Yes	Yes	Yes	Yes	Yes
REM	Liverpool University Hospitals NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RF4	Barking, Havering and Redbridge University Hospitals NHS Trust	Yes	Yes	Yes	Yes	Yes
RGN	North West Anglia NHS Foundation Trust	No	No	Yes	No	No
RGR	West Suffolk NHS Foundation Trust	No	No	Yes	No	No
RGT	Cambridge University Hospitals NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RH5	Somerset NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RH8	Royal Devon University Healthcare NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes

Code	Organisation Name	AAA	CEA	Angio	Bypass	Amp
RHM	University Hospital Southampton NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RHQ	Sheffield Teaching Hospitals NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RHU	Portsmouth Hospitals NHS Trust	No	No	Yes	No	No
RHW	Royal Berkshire NHS Foundation Trust	No	No	Yes	No	No
RJ1	Guy's and St Thomas' NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RJ6	Croydon Health Services NHS Trust	No	No	Yes	No	No
RJ7	St George's University Hospitals NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RJE	University Hospital of North Midlands NHS Trust	Yes	Yes	Yes	Yes	Yes
RJR	Countess of Chester Hospital NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RJZ	King's College Hospital NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RK9	University Hospitals Plymouth NHS Trust	Yes	Yes	Yes	Yes	Yes
RKB	University Hospitals Coventry and Warwickshire NHS Trust	Yes	Yes	Yes	Yes	Yes
RL4	Royal Wolverhampton Hospitals NHS Trust	No	No	Yes	No	No
RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RM3	Northern Care Alliance NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RMC	Bolton NHS Foundation Trust	No	No	Yes	No	No
RN5	Hampshire Hospitals NHS Foundation Trust	No	No	Yes	No	No
RNA	The Dudley Group NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RNN	North Cumbria Integrated Care NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RNS	Northampton General Hospital NHS Trust	Yes	Yes	Yes	Yes	Yes
RP5	Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RPA	Medway NHS Foundation Trust	No	No	Yes	No	No
RQW	Princess Alexandra Hospital NHS Trust	No	No	Yes	No	No
RR7	Gateshead Health NHS Foundation Trust	No	No	Yes	No	No
RR8	Leeds Teaching Hospitals NHS Trust	Yes	Yes	Yes	Yes	Yes
RRF	Wrightington, Wigan And Leigh NHS Foundation Trust	No	No	Yes	No	No
RRK	University Hospitals Birmingham NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RRV	University College London Hospitals NHS Foundation Trust	No	Yes	Yes	No	No
RTD	Newcastle upon Tyne Hospitals NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RTE	Gloucestershire Hospitals NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RTG	University Hospitals of Derby and Burton NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RTH	Oxford University Hospitals NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RTK	Ashford and St Peter's Hospitals NHS Foundation Trust	No	No	Yes	No	No
RTP	Surrey and Sussex Healthcare NHS Trust	No	No	Yes	No	No
RTR	South Tees Hospitals NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes

Code	Organisation Name	AAA	CEA	Angio	Bypass	Amp
RVJ	North Bristol NHS Trust	Yes	Yes	Yes	Yes	Yes
RVR	Epsom and St Helier University Hospitals NHS Trust	No	No	Yes	No	No
RVV	East Kent Hospitals University NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RWA	Hull University Teaching Hospitals NHS Trust	Yes	Yes	Yes	Yes	Yes
RWD	United Lincolnshire Hospitals NHS Trust	Yes	Yes	Yes	Yes	Yes
RWE	University Hospitals of Leicester NHS Trust	Yes	Yes	Yes	Yes	Yes
RWG	West Hertfordshire Teaching Hospitals NHS Trust	No	No	Yes	No	No
RWH	East and North Hertfordshire Teaching NHS Trust	Yes	Yes	Yes	Yes	Yes
RWP	Worcestershire Acute Hospitals NHS Trust	Yes	Yes	Yes	Yes	Yes
RWY	Calderdale and Huddersfield NHS Foundation Trust	No	No	Yes	No	No
RX1	Nottingham University Hospitals NHS Trust	Yes	Yes	Yes	Yes	Yes
RXC	East Sussex Healthcare NHS Trust	No	No	Yes	No	No
RXF	Mid Yorkshire Hospitals NHS Trust	No	No	Yes	No	No
RXN	Lancashire Teaching Hospitals NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
RXQ	Buckinghamshire Healthcare NHS Trust	No	No	Yes	No	No
RXR	East Lancashire Hospitals NHS Trust	Yes	Yes	Yes	Yes	Yes
RXW	Shrewsbury and Telford Hospital NHS Trust	Yes	Yes	Yes	Yes	Yes
RYJ	Imperial College Healthcare NHS Trust	Yes	Yes	Yes	Yes	Yes
RYR	University Hospital Sussex NHS Foundation Trust	Yes	Yes	Yes	Yes	Yes
SA999	NHS Ayrshire & Arran	No	No	Yes	No	No
SF999	NHS Fife	No	No	Yes	No	No
SG999	NHS Greater Glasgow and Clyde	Yes	Yes	Yes	Yes	Yes
SH999	NHS Highland	No	No	Yes	No	No
SL999	NHS Lanarkshire	Yes	Yes	Yes	Yes	Yes
SN999	NHS Grampian	Yes	Yes	Yes	Yes	Yes
SS999	NHS Lothian	Yes	Yes	Yes	Yes	Yes
ST999	NHS Tayside	Yes	Yes	Yes	Yes	Yes
SV999	NHS Forth Valley	No	No	Yes	No	No
SY999	NHS Dumfries and Galloway	No	No	Yes	No	No
ZT001	Belfast Health and Social Care Trust	Yes	Yes	Yes	Yes	Yes

Key

AAA – Performs AAA repair
CEA – Performs carotid endarterectomy
Angio – Performs lower limb angioplasty/stent
Bypass – Performs lower limb bypass
Amp – Performs major lower limb amputation

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Glossary

Abdominal aortic aneurysm (AAA)	This is an abnormal expansion of the aorta. If left untreated, it may enlarge and rupture causing fatal internal bleeding.
Amaurosis fugax	Transient loss of vision in one eye due to an interruption of blood flow to the retina.
ACE inhibitors	Angiotensin-converting enzyme inhibitors are medications designed to decrease blood pressure.
ARBs	Angiotensin-receptor blockers are drugs designed to decrease blood pressure. They are similar to ACE inhibitors but work in a different way.
Angiography	Angiography is a type of imaging technique used to examine blood vessels. It may be carried out non-invasively using computerised tomography (CT) and magnetic resonance imaging (MRI).
Asymptomatic patient	A patient who does not yet show any outward signs or symptoms of plaque.
Cardiopulmonary exercise testing (CPET)	Cardiopulmonary exercise testing is a non-invasive method of assessing the function of the heart and lungs at rest and during exercise.
Carotid endarterectomy (CEA)	Carotid endarterectomy is a surgical procedure in which plaque build-up is removed from the carotid artery in the neck.
Carotid stenosis	Abnormal narrowing of the neck artery to the brain.
Complex AAA	A term used to describe aortic aneurysms that are not located below the arteries that branch off to the kidneys. These are categorised into three types: juxta-renal (that occur near the kidney arteries), supra-renal (that occur above the renal arteries) and thoraco-abdominal (more extensive aneurysms involving the thoracic and abdominal aorta).
Cranial nerve injury (CNI)	Damage to one of the 12 nerves supplying the head and neck.
Chronic limb-threatening ischaemia (CLTI)	The most severe form of peripheral arterial disease, where the blood flow to the legs becomes severely restricted, to such an extent that these parts of the limb are at risk of developing gangrene. CLTI is associated with severe pain at rest, which is often worse at night, and there may also be ulcers on the leg and foot.

Confidence interval (CI)	A statistical term used to describe the range of values that we are confident the metric lies within.
Endovascular aneurysm repair (EVAR)	A method of repairing an abdominal aortic aneurysm by placing a graft within the aneurysm from a small cut in the groin.
Fontaine score	An internationally recognised scoring system or classification of the severity of peripheral arterial disease.
Hospital Episode Statistics (HES)	HES is the national statistical data warehouse for England regarding the care provided by NHS hospitals and for NHS hospital patients treated elsewhere. There are equivalent agencies in Northern Ireland, Scotland and Wales but in this report, the term HES is used generically to describe data that is collected by any of these national agencies.
Index case	The first procedure a patient underwent in their hospital admission.
Infra-renal AAA	An abdominal aneurysm that is located below the point where the arteries branch off the aorta to the kidneys.
Interquartile range (IQR)	Once the data are arranged in ascending order, this is the central 50% of all values and is otherwise known as the ‘middle fifty’ or IQR.
Hybrid operating theatre	An operating theatre with built-in radiological imaging capabilities. The imaging equipment is able to move and rotate around a patient and multiple monitors provide good visibility around the operating table.
Median	The median is the middle value in the data set; 50% of the values are below this point and 50% are above this point.
Myocardial infarct (MI)	Otherwise known as a heart attack, MI involves the interruption of the blood supply to part of the heart muscle.
Occluded artery	An artery that has become blocked and stops blood flow.
National Abdominal Aortic Aneurysm Screening Programme (NAAASP)	A programme funded by the Department of Health to screen men over the age of 65 years for AAA.
OPCS	Office of Population and Censuses Surveys. A procedural classification list for describing procedures undertaken during episodes of care in the NHS.

Peripheral arterial disease (PAD)	Peripheral arterial disease (PAD) is a restriction of the blood flow in the lower-limb arteries. The disease can affect various sites in the legs, and produces symptoms that vary in their severity from pain in the legs during exercise to persistent ulcers or gangrene.
Plaque	Scale in an artery made of fat, cholesterol and other substances. This hard material builds up on the artery wall and can cause narrowing or blockage of an artery or a piece may break off causing a blockage in another part of the arterial circulation.
Stroke	A brain injury caused by a sudden interruption of blood flow with symptoms that last for more than 24 hours.
Symptomatic	A patient showing symptoms is known to be symptomatic.
Transient ischaemic attack (TIA)	A “mini-stroke” where the blood supply to the brain is briefly interrupted and recovers after a short time (e.g., within 24 hours).
Trust or Health Board	A public sector corporation that contains a number of hospitals, clinics and health provisions. For example, there were 4 hospitals in the Trust and 3 Trusts in the region.
Vascular Society of Great Britain and Ireland (VSGBI)	The VSGBI is a registered charity founded to relieve sickness and to preserve, promote and protect the health of the public by advancing excellence and innovation in vascular health, through education, audit and research. The VSGBI represents and provides professional support for over 600 members and focuses on non-cardiac vascular disease.

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