



Provision of Services for People with Vascular Disease 2024

Record numbers waiting for treatment

People waiting for hospital treatment in England (millions)



“Recommendations for vascular services to deliver on POVS 2021 standards”

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Endorsed by



Supplementary material, along with all POVS documents, is available on the Vascular Society website:
<https://vascularsociety.org.uk/vascular-services/provision-of-vascular-services>

The online supplement includes glossary of terms and abbreviations for the lay reader.

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Acknowledgements

My enormous thanks to everyone who has inputted into the writing of POVS 2024.

In keeping with the multi-professional nature of vascular care I would first like to thank the Presidents and Chairs of the allied vascular societies for their input and forewords. I am equally grateful to Eric Fisher and Rob Sneyd for reading the document and providing their invaluable feedback, 'the patient voice'.

My special thanks also go to the eight section leads. The section leads were tasked with addressing a theme, putting together a writing team and presenting their content accompanied by infographics. All eight have done this brilliantly. Special thanks also to Nina Al-Saadi, Sean Pymer and Sam Waton for their input into this work.

I apologise to colleagues in the devolved nations and Ireland that this document focuses too much on England. Whilst we have included workforce data from across the UK, often financial and waiting list data were most readily available for England.

Writing POVS would not have been possible without the support of the Societies Open Council, the secretariat at EBS Ltd and Helen Jones at Production 10 Ltd. Special mentions to Andy Garnham, Ian Chetter, Douglas Orr, Gail Ryan and Louise Collins.

The typos you find are all mine, and apologies for anyone I have failed to thank; we could not have completed this work without you. My hope now is that POVS 2024 will lead to positive changes and benefit for people living with vascular disease.

Marcus Brooks

2. FOREWORDS



Andrew Garnham, *President*
Vascular Society of Great Britain and Ireland

Since 2004, the Vascular Society has outlined a clear direction of travel for the specialty of vascular surgery in the UK and Ireland with the tri-annual publication of the Provision of Vascular Services (POVS).



POVS recommendations have done much to shape what is now a maturing specialty with well organised vascular networks.

POVS in 2012 looked at how patients might be treated by a vascular specialist, moving forward to delivering services in clinical networks in 2015 and particularly focusing on emergency care of our patients in 2018.

In POVS 2021 we looked in detail across the whole spectrum of our vascular practice at how vascular services should be configured and delivered. **The blueprint from POVS 2021 remains the description of the high-quality vascular service the Society wishes to see commissioned and delivered for our patients in 2024.**

POVS 2024 explores where the implementation of the 2021 recommendations has proved challenging and offers solutions. The challenges are framed against the wider issues for UK healthcare described in Lord Darzi's independent investigation of the NHS in England.

We have focused on eight areas where we feel that change would make the greatest difference for people with vascular disease. To achieve this, well-functioning vascular teams from multi-professional backgrounds are essential. We look at how such teams are developed and led. Sustainability has also become a national focus of health care since we published POVS 2021. It is key that we shine a light on how vascular services can make our services as carbon efficient as possible.

We want the UK and Irish Governments, public health, healthcare commissioners and vascular networks to use POVS 2024 in conjunction with POVS 2021 to work together to deliver the high-quality services our patients with vascular disease deserve.



Prof Robert Morgan, *President*
British Society of Interventional Radiology

It gives me great pleasure as the President of BSIR to write this foreword for the 2024 iteration of the UK Provision of Vascular Services (POVS) document. As a vascular interventional radiologist, I appreciate the importance of the Vascular Society's POVS documents for the benefit of patient care and was fortunate to have been a contributor to POVS 2021.



Congratulations go out to Marcus Brooks and all the Section Editors and Contributors for bringing this document to completion less than a year after its inception.

This document builds on the success and content of POVS 2021. It focuses on specific aspects of UK vascular disease in a deep dive manner. Key sections on people, teams and culture; time critical interventions; unwanted clinical variation; and person-centred care to name just a few of the topics covered. The sections contain essential information relevant to all vascular practitioners whatever their background.

POVS 2024 is very worthwhile reading and I recommend it for your attention.



Jane Todhunter, *President*
Society of Vascular Nurses

The Society of Vascular Nurses (SVN) is delighted to support this latest version of POVS.

There is a greater emphasis on the patient at the centre of the vascular service; this is of course a pivotal concept for nurses. Indeed, the SVN has championed patient empowerment and collaborative care as part of "Legs Matter", and supports patient self-management through increasing knowledge, skills and confidence for individuals managing their own health.

As vascular workload exceeds capacity, vascular nursing roles are developing to support the vascular workforce and develop sustainable services. Vascular nurse consultants, advanced clinical practitioners and vascular specialist nurses are demonstrating capability in practice using the SVN capability framework to ensure patient safety and patient centred care. The SVN supports POVS 2024's focus on minimising environmental impact by developing a sustainable society, minimising waste whilst supporting excellence in clinical practice, education, research and professional networking across vascular services.



Louise Tisdale, *Chair*
British Association of Chartered Physiotherapists in Amputee Rehabilitation

BACPAR is pleased to contribute to this update of the POVS. POVS continues to highlight the importance of physiotherapy within the vascular MDT to deliver treatments toward the prevention of major surgery and supports the long-term rehabilitation of individuals who have undergone surgery, in some circumstances, that is life changing.

Having carried out a national survey (2023/24) of physiotherapists involved in the delivery of any part of the rehabilitation of individuals having undergone limb amputation surgery, BACPAR has gained a good understanding the varied nature of physiotherapy roles in terms of location, equipment available, experience and challenges of referral pathways.

BACPAR is keen to support individuals who work outside of commissioned prosthetic services to raise their profile with commissioners. Work continues to update rehabilitation guidelines and disseminate them widely to support practitioners in their delivery of care.





Kamran Moderasi, *President*
The College and Society of Clinical Vascular Science



With the ever-changing landscape of vascular disease, it is important to review our approach to assessing, imaging, treating and surveillance of our patients. The multidisciplinary approach to the management of vascular patients and the use of resources and personnel in a focused and efficient manner is a key driver in achieving better outcomes. POVS 2024 aims to address the steps necessary to transform vascular services in a sustainable and equitable manner.

NHS staffing pressures across the whole of the UK and Ireland have resulted in substantial overlap in Allied Health Professional job profiles. We now have Consultant Clinical Vascular Scientists leading vascular imaging units with such developments as the Interventional Clinical Vascular Scientists (CVS), 'one stop' clinic support and CVS led outpatient clinics. We now expect all CVS to have completed the AVS accreditation process or a CASE (Consortium for the Accreditation of Sonographic Education) approved vascular ultrasound course or the NHSE Scientific Training Programme. Our job profiles now stipulate a 20% of time allocation for research, audit and professional development. This enables the CVS to roll out new services.

This document aims to address the many hurdles faced by all allied vascular societies and acts as a reference for making the step change required to meet ever-increasing demand.



Andrew Nickinson, *President*
Rouleaux Club



This document builds upon POVS 2021 and concentrates on key areas which can potentially make the greatest difference to our patient population. From a trainee perspective the focus on workplace culture is welcome, particularly considering the ongoing reporting of sexual harassment and bullying, as a cohesive and positive work culture is essential for any multidisciplinary team to function.

New sections of patient centred care and sustainability also highlight the importance of not only making sure we work with patients to develop and deliver vascular services, but also deliver services which are going to be environmentally sustainable long into the future. POVS 2024 is essential reading for vascular surgeons in training. The Rouleaux Club are delighted to support it.



Neeraj Bhasin, *Chair*
Circulation Foundation

As Chair of the Circulation Foundation, I am delighted to have seen POVS 2024, which very clearly continues from, and builds on, the foundation provided by the comprehensive POVS 2021. It represents a practical document encompassing how we deliver truly holistic care to the patients we serve.

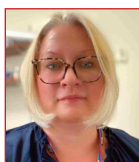
It importantly highlights the multi-disciplinary team, and the fact the care we provide involves all these roles collaborating and holding the patients, their experience, safety and outcomes at the core through patient centred care. The document also reflects the evolution of specialty with the need to adapt to other demands, such as sustainability, health inequalities, variation in access and innovation.



Prof Rob Sayers, *Chair*
NHS England Vascular CRG

POVS 2024 is a fantastic document and a tribute to Marcus Brooks and his team from the VS and allied societies. It sets out how vascular services should be provided for the benefit of patients. It does this in a comprehensive manner and also keeps up to date with details of new innovations and ways to improve the service.

The VS has a proven track record of high quality outputs, national audit and quality improvement programmes. POVS 2024 maintains this tradition. I have used the previous editions of POVS in meetings with clinicians and managers during service reconfiguration and commissioning meetings and it is a great asset to support rational, sensible discussions. I am sure POVS 2024 will continue to be a document that supports high quality patient care.



Rachel Bell and Jon Boyle, *Joint Leads*
NHS England Vascular GIRFT Programme

POVS 2024 recognises the significant challenges that clinicians face in delivering timely treatment to vascular patients and there is no doubt that many feel unable to provide the quality care for their patients to which they aspire.

Furthermore, POVS 2024 has also highlighted significant variation in both vascular practice and outcomes across the UK and Ireland. The Getting it Right First Time (GIRFT) programme is designed to improve treatment and care by reviewing services in England. By tackling variation in service delivery and sharing best practice, GIRFT identifies changes that will improve care and patient outcomes as well as deliver efficiencies.

To this end we are delighted that the 2018 GIRFT Report has had such a positive impact and led to the delivery of the Vascular Society's successful PAD-QIF and the CLTI CQUIN in England. We are also pleased that the Society has positively engaged with the National Consultant Information Programme (NCIP) and the Outcomes and Registries Programme (ORP), both important workstreams in GIRFT aimed at driving improved quality and enhanced patient safety.

We believe a close working relationship between GIRFT, VS, BSIR, NHS England CRG, our patients and other important stakeholders are vital to implement the improvements identified in POVS 2024 and we look forward to collaborating to deliver these priorities.

3. PATIENT PERSPECTIVES

'We need to work within our communities, asking our patients what is most important to them regarding their health?'



Rob Sneyd
Retired doctor &
a vascular
surgery patient

Few of us start our week expecting to become a patient and in vascular surgery the transition is often sudden and sometimes dramatic. The difference between rapid implementation of a well-structured pathway, 'organised chaos', and simple chaos may not be obvious to the untrained eye so we appreciate clear and honest delivery of information, in a language that we can understand - even if the news is bad or the prospects are uncertain.

Once through an acute episode (elective or emergency) we are into the world of follow-up and can often feel forgotten. Well-managed appointment systems, scans and other investigations nicely synchronised with appointments and a gentle trickle of information reassure us and save time and stress for patients and clinicians alike. 'Scanxiety' brought on by delayed or unreported imaging is a particular stressor.

We are grateful to the clinical teams who care for us and appreciate that they need to look after themselves as well as their patients. Multi-hospital emergency cover systems and well-managed transfers can offer safe and effective services - and we appreciate that reality.

Finally, relevant laboratory work, data science and clinical research are essential to improving outcomes. Local and system-wide quality assurance ensure that standards are maintained, and best practice is consistently implemented. We welcome all of these.



Eric Fisher
Patient & Public Voice
Partner, NHS England
Vascular Diseases CRG

I am very encouraged that this year's POVS is building upon the previous report in 2021, with an increased emphasis on the importance of patient empowerment to help drive improvement in vascular services.

It is worth mentioning that improved patient and public engagement is a key recommendation in the Lord Darzi independent review of the NHS published in September 2024. But how will this be achieved? This is not an easy thing, especially recognising the pressure clinicians are under with high waiting times across the board, competing priorities, workforce pressures and challenges on achieving a comprehensive data base.

Notwithstanding this, a key acid test which POVS 2024 says in its conclusion needs to be made in 5 years' time, will be whether we have got better at listening to our patients (and indeed involved as critical partners)?

Joined up working across departments (taking a multi-disciplinary approach) so patient pathway is clear with each clinician knowing what is going on will be vital.

Also, for clinicians and their teams to engage fully with the patient (and their carer/ family member/ friend as appropriate) to ensure the patient's individual condition is fully understood and the patient understands the options and risks so they can get what is right for them.

Communication, communication, communication

And I fully endorse POVS 2024 in stressing the need to raise standards across the country to ensure everyone receives the best care possible wherever they live and whatever their circumstances.

Achieving these standards consistently is key in raising standards and to get the quality improvement in patient outcomes we all want.

As POVS says, data to monitor standards on what we do matters, and along with this is the need to develop patient-reported outcome and experience measures (PROMS and PREMS) to understand better how successful or otherwise the procedure was from the patient perspective.

I thank Marcus Brooks for giving me the opportunity to give a patient perspective and for all the expert clinicians and other staff who work so expertly, tirelessly and with their passion for improving patient safety and improved patient outcomes.

4. LAY SUMMARY



Marcus Brooks
Honorary Secretary
Vascular Society

POVS 2021 set the framework for the provision of high-quality vascular care

Care delivered by specialists working in networks and as multi-disciplinary teams.

Effective leadership to deliver the vision and maintain good staff engagement.

However, the standards set in POVS are not being consistently delivered

Health inequalities have widened across the UK and Ireland in the last 3 years.

People are waiting too long for surgery; be it carotid endarterectomy, AAA repair and when admitted to hospital with a threatened limb.

Treatment is inconsistent, with variation most marked in the elective repair for abdominal aortic aneurysm, treatment for aortic dissection and for venous surgery.

Productivity has fallen

Fewer procedures are being performed.

People spend too long in hospital, e.g. awaiting transfer into an arterial centre or awaiting discharge from hospital.

Referral pathways are inconsistent, unstructured, and poorly integrated into primary care digital systems.

Too much time, energy and money are spent on complaints and on litigation.

Clinical research

We are struggling to deliver all the vascular surgery clinical trials.

Not enough progress has been made in listening to patients

Listening to patients about what's important to them will deliver tangible improvements in patient safety and clinical outcomes.

Better communication is a major issue regularly raised by patients, but is rarely prioritised, even though this could directly enable patients to better self-care, help streamline pathways as well as improving administrative processes.

Our workforce is a concern

The training of the next generation of vascular surgeons has been adversely affected by Covid-19, industrial action and cuts to deanery education budgets.

Senior staff have left, and this gap is not quickly filled as it takes time to reach 'expert' status in a 'craft' speciality.

Unprofessional behaviour persists.

The way forward

We must improve the cardiovascular health of the nation, including tackling inequalities.

We need funding and capital investment in facilities, scanners and IT.

We must change workplace cultures and recruit, train and retain staff.

We need better structured referral pathways, and more patients should be offered enrolment into clinical trials.

We must better involve patients in service design, decisions on their care and learn from their lived experience.



"Ultimately POVS 2024 brings evidence-based clarity of the standards we all need to, and want to, meet to ensure we can be proud of the care we give to people with vascular disease."

Neeraj Bhasin, Chair, Circulation Foundation

5. EDITOR'S INTRODUCTION

"We are not tinkers who merely patch and mend what is broken ... we must be guardians of the life and the health of our generation."

Dr Elizabeth Blackwell

5.1 Provision of vascular services

5.1.1. The allied Vascular Societies of Great Britain and Ireland promote world class care for people with vascular disease.

5.1.2 Provision of Vascular Services (POVS) defines the vision, sets standards and recommends improvements ¹

5.1.3 The principles set out in POVVS 2021 have not changed in 2024:

- Care should be patient centred and integrated into local healthcare systems.
- Most treatments are 'time critical'.
- Achieving best outcomes requires a MDT approach with specialists and sufficiently high annual case volumes.
- Vascular specialists regularly assist colleagues in other specialities.

5.2 Current challenges

5.2.1 The NHS as a healthcare system in 2024 is less resilient than it was in 2021:

- Our hospital infrastructure is aging.
- The Covid-19 pandemic has resulted in disruption to clinical pathways, high waiting lists, staff burnout and staff leaving the health service.
- There has been a sustained period of lower NHS funding due to two periods of government austerity.

5.2.2 The impact of these factors is that patients no longer flow through hospitals as they should.

5.2.3 Despite an increase in the hospital workforce, the number of outpatient appointments and operations performed has not increased at the same pace - **productivity has fallen**.

5.2.4 Two reasons were highlighted by Lord Darzi in his investigation for poor patient flow through hospitals: ²

- Shortage of capital prevents hospitals being productive.
- 13% of NHS beds are occupied by people waiting for social care support or care in more appropriate settings.

5.2.5 An ageing population is the most significant driver of increased demand.

5.2.6 Many of the social determinants of poor health – such as income, housing, education – are also moving in the wrong direction, Figure 5.1. ³

Figure 5.1. Factors contributing to cardiovascular disease (WHO, 2016).



5.3 Finding our way forward

5.3.1 In POVVS 2024 we will look in depth at the challenges and explore solutions.

5.3.2 We recognise that change will only be delivered when ICBs and Trusts work together with clinicians and patients.

5.3.3 Our services need to be sustainable, addressing population health and health and social inequalities.

5.3.4 Monitoring standards, research and innovation remain key to delivering better care.

5.3.5 In POVVS 2021 the Vascular Society identified six key areas for focus, Figure 5.2, and Lord Darzi has highlighted five challenges to UK healthcare in his independent report, Figure 5.3.

Figure 5.2. Key areas for focus identified in the Provision of Vascular Services (POVS) 2021.

Vascular Society: Provision of Vascular Services 2021

Key areas of focus

- **Vascular networks**
Five units have centralised since 2021. Ireland is looking again at how vascular services are delivered.
- **Specialist aortic services**
In England, most regions now have an acute aortic dissection pathway. Scotland has a fortnightly virtual aortic MDT.
- **Leg and foot ulceration**
Improvements have been achieved in England through the 2022–24 NHSE CLTI-CQUIN.⁴ The NWCSP 5 and Scottish Centre for Sustainable Delivery have published pathways for leg and foot ulceration.^{5,6}
- **Peri-operative care**
Pre- and rehabilitation, and comprehensive geriatric assessment remain as areas for improvement.
- **Medical device safety**
Medical device data is now captured via the NVR and passed in England to the Outcome Registry Programme (established in 2022).
- **Advanced care planning**
Research is needed into palliative care team input for people with vascular disease and reduced life expectancy.

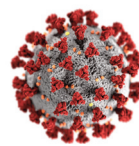
Figure 5.3. Five highlighted challenges to UK healthcare from the Darzi independent report.

Lord Darzi: Independent investigation of the NHS in England

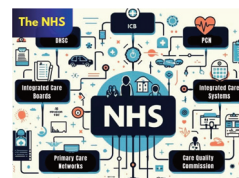
Summary of key findings negatively impacting the NHS



Spending cuts and underinvestment



The Covid-19 pandemic



Organisational changes



Not listening to patients



Staff disengagement

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1. <https://vascularsociety.org.uk/vascular-services/provision-of-vascular-services/> (Accessed 26 Sept 2024).
2. Lord Darzi (2024). Independent Investigation of the National Health Service in England.
3. The Health Foundation (2021). Unequal pandemic, fairer recovery. The Covid-19 impact recovery report.
4. The Vascular PAD-QIF CQUIN: what is it, why is it important, what does it mean for vascular units? JVSGBI 2022; 1(3): 63–4.
5. <https://www.nationalwoundcarestrategy.net/lower-limb/> (Accessed 26 Sept 2024)
6. <https://www.nhscfsd.co.uk> (Accessed 26 Sept 2024)

6. PEOPLE, TEAMS AND CULTURE

‘Our vascular multi-professional teams are our greatest strength. Our concern is that without better planning, training, leadership and remuneration they will wither.’

6.1 Workplace culture

- 6.1.1 A positive work culture is where individuals feel valued, respected, and motivated to contribute their best efforts.
- 6.1.2 In the words of Lord Darzi:
“NHS staff are the ‘beating heart’ of the national health service. They are bound by a deep and abiding belief in NHS values and there is a shared passion and determination to make the NHS better for our patients.”
- 6.1.3 It is concerning that recent NHS staff surveys¹ and responses regarding potential industrial action, Figure 6.1, report disengagement and significant concerns regarding pay and conditions.

Figure 6.1 Members’ views in 2023 on the issues informing their response to the BMA ballot for industrial action.



- 6.1.4 Many senior medical, nursing and other healthcare staff have left since 2021.
- 6.1.5 Staff feel undervalued after having been praised during the pandemic, especially regarding pay settlements, and this has led to industrial action.
- 6.1.6 Cultural challenges within the NHS, including bullying, undermining and harassment (BUH), concealing problems, and retaliation against whistleblowers, persist.
- 6.1.7 Recent surveys of vascular trainees report a high incidence of BUH, with 43–72% of respondents reporting having experienced such behaviour.^{2,3}
- 6.1.8 Especially concerning has been the reporting of high levels of sexual harassment by WPSMS.⁴

- 6.1.9 Sickness absence rates have also increased. The most common reasons cited are anxiety, stress, depression or other mental health illnesses.
- 6.1.10 Negative behaviours in the workplace have a profoundly detrimental impact not only on the victims but on the wider team and ultimately patient care.³⁻⁵
- ### 6.2 Recruitment and retention
- 6.2.1 Results of a 2024 survey of the consultant vascular surgeon workforce in the UK are illustrated in Figures 6.2–6.5 and 6.9 (acknowledgement Mr P. Lintott).
- 6.2.2 From these findings it is worth noting that the average age at retirement has fallen to 63 years (median) and 1 in 5 (20%) of consultant vascular surgeons are female (a year-on-year increase).
- 6.2.3 A retirement survey was circulated to VS members in Dec 2022. 188 members responded and 50% said that they plan to retire during the next few years, with 65% intending to retire earlier than expected.

Figure 6.2 Age and gender in 2024 of vascular surgeons responding to the RCS Engl census.

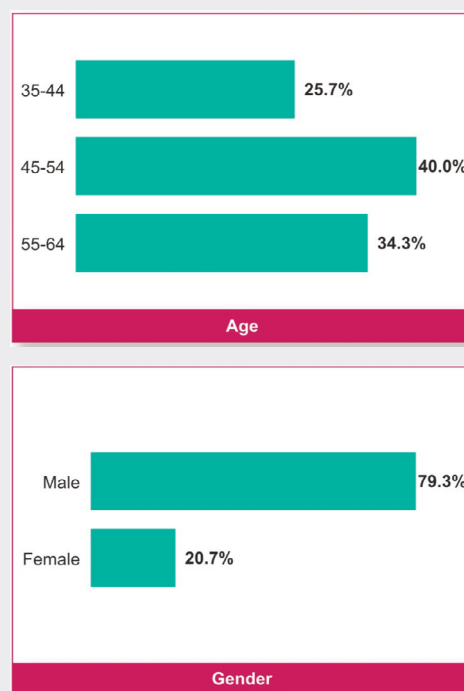


Figure 6.3 Employment status of vascular surgeons, LTFT – less than full time (2023 data).

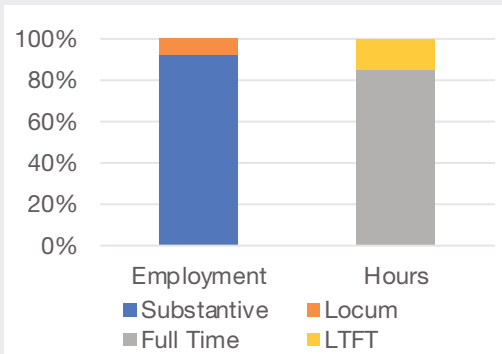


Figure 6.4 Projected numbers of UK Consultant vascular surgeons to the end of the decade (P Lintott, telephone survey of 64 UK vascular centres.)

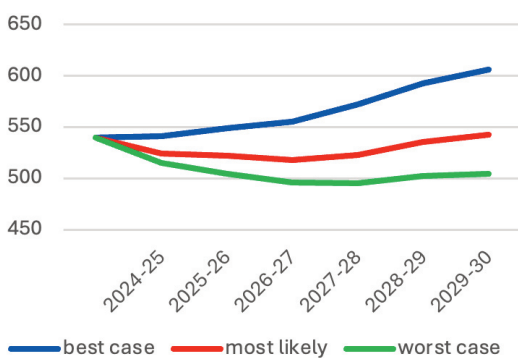
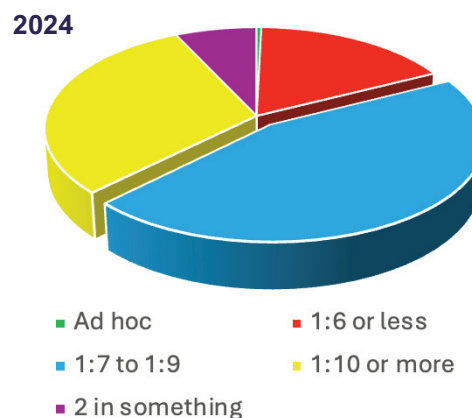
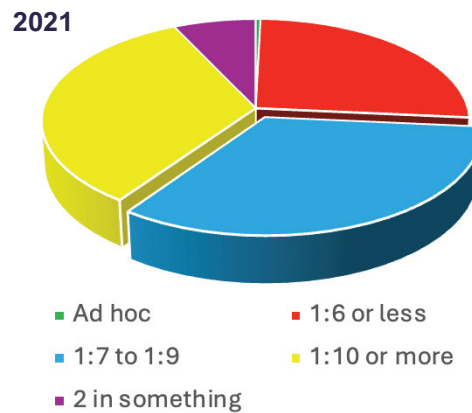


Figure 6.5 Changes in frequency of UK vascular surgery on-call from 2021 to 2024. (VS recommends max frequency of 1 in 6.)



6.2.4 Reasons given for intending to retire early were pension taxation, feeling undervalued, on-call commitments and stress due to more complex patients and poor facilities.

6.2.5 Industrial action by doctors and the finding of the RCS Eng. 2023 UK surgical workforce census provide a significant cause for concern: ⁶

Consultant responses (vascular) *

- 68% worked 11 PAs or more.
- 42% working above contracted hours.
- 62% reported burnout or stress.
- 47% considered leaving the NHS in the past 12 months.
- 47% cited increased admin work as the reason for working more hours.

* 183 England, 13 Scotland and 10 N. Ireland.

6.2.6 There have also been changes in England and Wales to the national awards scheme for consultants that may further impact on retirement plans.

6.3 Extended surgical team

6.3.1 There are 63 vascular centres in the United Kingdom and 10 in Ireland.

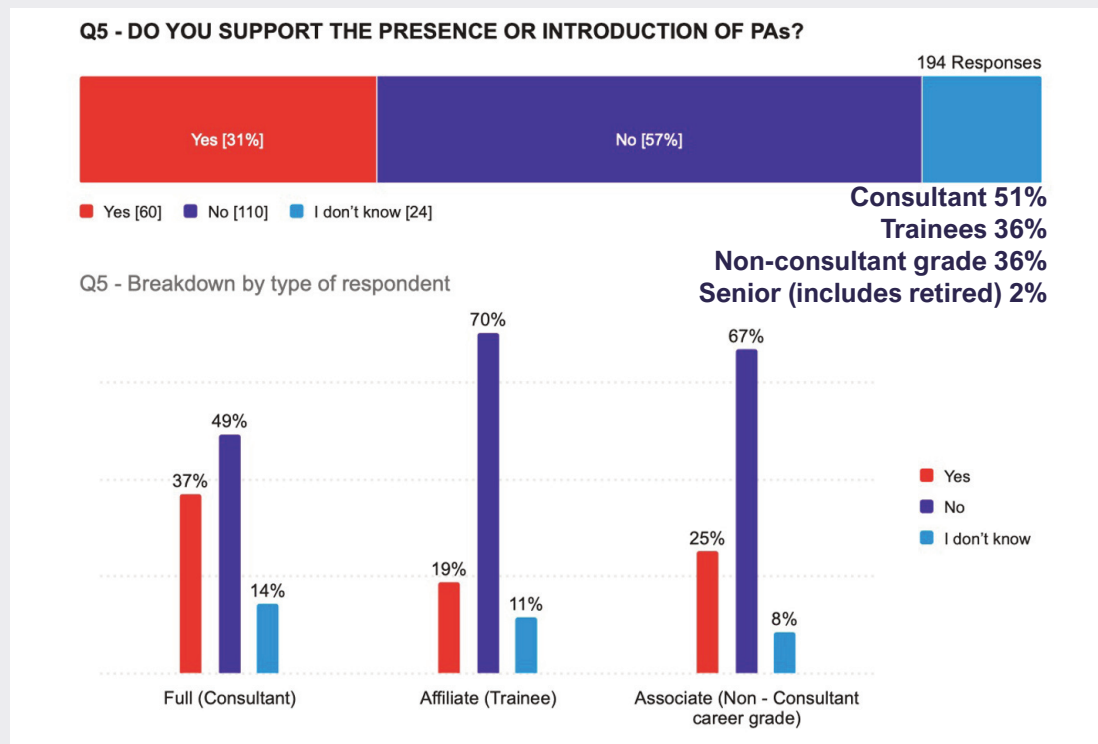
6.3.2 Recognition of the complexity of managing people with vascular disease has resulted in an increased involvement of multiple different disciplines in vascular patient care delivery.

6.3.3 The presence of an increased number of professionals with different training, knowledge base, skillset and treatment priorities, while of enormous benefit to the patient when working properly, also increases the possibility of misunderstanding and potential conflict.

6.3.4 According to the Nuffield Trust there has also been a significant change to the UK's nursing workforce from 2018-23: ⁷

- Proportion of new nursing registrants (<1 year on register) nearly doubled from one in 27 one in 14.

Figure 6.6 Results of the 2024 survey of VS members on Physician Associates (PAs) in vascular multidisciplinary teams.



- Non-UK nurse joiners also doubled in proportion from 21% to 42%.
- In 2023, over a third (34%) of all nurses and midwives are under 35, compared with 28% in 2015.

- 6.3.5 The NHS Long Term Workforce Plan has proposed doubling medical school places to 15,000 by 2031/32 which will lead to an increased availability of doctors to staff the workforce.⁸
- 6.3.6 We will need to expand our training numbers and the capacity to train the expanding workforce.
- 6.3.7 The plan also includes the ambition to increase the number of Physician Associates (PAs) working in NHS England to 10,000 by 2036/37.⁸
- 6.3.8 Whilst there are excellent examples of PAs being integrated into vascular teams; PAs are yet to find a consistent role that dovetails with the other members of the multidisciplinary team in the specialty.
- 6.3.9 A recent survey shows that most VS members who responded have significant concerns regarding the role of PAs, Figure 6.6.
- 6.3.10 These concerns principally relate to the impact on training (recruitment, retention and delivery), the perceived deficiencies in

governance and concern regarding scope of practice, Figure 6.6.

- 6.3.11 The VS supports the recent recommendations issued by the FSSA on scope of PA practice.

6.4 Team behaviour

- 6.4.1 For a vascular MDT to function its leaders need to understand the capabilities and training needs of all team members.
- 6.4.2 Interaction between members of the Vascular MDT at clinical/trust level both formally in the shape of multi-disciplinary team meetings and informally through discussion at clinical level allows greater understanding of the roles each discipline plays in the patients' journey of care and fosters mutual respect.
- 6.4.3 Greater interaction between professional societies for different staff groups in the form of scientific meetings also augments mutual understanding and respect.
- 6.4.4 Training and simulation as a team will build mutual understanding of roles and is important for patient safety.⁹
- 6.4.5 Clear definitions of roles and responsibilities of members of the Vascular MDT combined with appropriate governance of each discipline mitigate the

Figure 6.7 NHS People Promise.



prospect of misunderstanding and conflict between team members, Figure 6.7.

6.5 Workforce initiatives

- 6.5.1 In line with the NHS People Plan 2020/21, Vascular MDTs must respond to new challenges and opportunities, looking after people, developing a culture of belonging, explore new ways of working.
- 6.5.2 The Vascular Society recommends 1 whole time equivalent (WTE) vascular surgeon per 100,000 population. Inequalities persist in the provision of vascular surgeon by population between UK regions and countries, Figure 6.8. Northern Ireland has the lowest provision.

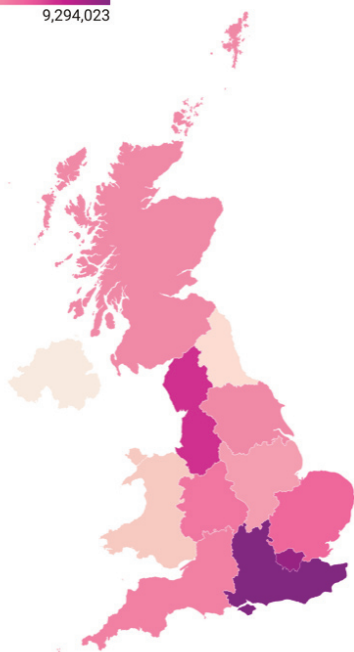
Engagement

- 6.5.3 The increase in medical student numbers must be matched by better engagement between vascular units and medical schools to promote vascular surgery as a career choice.
- 6.5.4 A study of undergraduate teaching in UK medical schools revealed that 45% of medical students graduate without ever having a vascular placement.¹⁰
- 6.5.5 To encourage recruitment the VS published '**All you need to know about vascular surgery**' in 2023.
- 6.5.6 Changes by the GMC to the process of specialist registration for applicants pursuing the previous CESR pathway

Figure 6.8 (a) UK population per region and (b) population per region per whole time equivalent (WTE) consultant vascular surgeon. NI and Southeast England are the two regions least well provisioned. (Similar distribution is observed analysing number of WTE vascular surgeons by adult diabetic population).

a Population per region

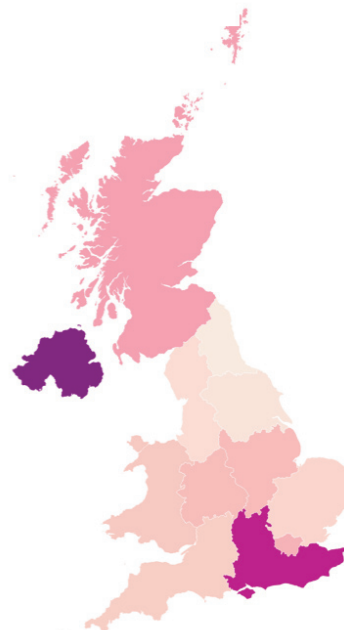
1,904,563 9,294,023



Created with Datawrapper

b Population per region /WTE

98,430.88 224,066.24



Created with Datawrapper

should have a positive impact on the number of specialists available to join the workforce.

- 6.5.7 The VS has made special efforts to engage with this group of doctors and support them through the CESR pathway.
- 6.5.8 The VS recognises that engaging with mid-career and late-career consultants is as important.

Mentorship

- 6.5.9 The 2022 report Health and social care review: leadership for a collaborative and inclusive future (Messenger and Pollard) highlighted concerns around the training and development of leadership and management and recommended improvements, which NHS England has started to implement.
- 6.5.10 The VS believes that mentorship is key at all stages of a surgeon's career, but especially in the first 3 years of consultant practice.

Productivity

- 6.5.11 Whilst staff numbers have risen, this hasn't been matched by more people being treated.
- 6.5.12 The reasons given by surgeons in the RCS England census for the fall in productivity are highlighted in Figure 6.9.
- 6.5.13 The number one reported reason given by surgeons was that they did not have access to theatre sessions.
- 6.5.14 Other factors also play a part:

Productivity

- Many job plans have one or fewer days of inpatient operating a week.
- Administrative tasks increasingly fall to consultant surgeons.
- High rates of burnout are reported for the speciality, despite higher-than-average reported resilience.

- 6.5.15 Contrary to what might be the case, people like to be productive, and none more than surgeons!

Figure 6.9 Reasons for falling productivity.



Retention

- 6.5.16 We need now to consider retention across all staff groups including trainees.¹¹
- 6.5.17 The VS has started an ASPIRE programme to support early years consultants.
- 6.5.18 Early retirement, the loss of senior staff, is a real concern.
- 6.5.19 We need to explore if changes should be made to recommendations regarding on call for vascular surgeons aged over 55 years of age.¹²

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7. TIME CRITICAL CONDITIONS

‘Vascular surgery has parallels to cancer surgery in that much of what we do is ‘time critical’. Delay can cause disease progression and may result in death.’

7.1 Treatment times

- 7.1.1 How long people wait and the quality of care they receive are at the centre of the social contract between the NHS and the people. ¹
- 7.1.2 Time critical conditions (TCCs) are conditions that require immediate medical attention to prevent death or long-term disability.
- 7.1.3 Many vascular referrals are TCCs, requiring inpatient admission or a well organised and structured pathway for outpatient assessment and imaging:

- Endovascular repair for ruptured AAA within **1 hour** at arterial centre.
- Inpatient reviews within **72 hours** of referral across all network hospitals.
- Revascularisation for people with CLTI within **5 days** (admitted) and **14 days** (non-admitted).
- People with a lower limb wound assessed within **14 days** of referral.
- CEA within **14 days** of transient ischaemic attack or minor stroke.
- Intact AAA repair performed within **8 weeks** of reaching threshold.
- Non-urgent treatment delivered within **18 weeks** of referral.

- 7.1.4 NHS England has adopted a waiting list prioritisation framework:
- ‘P1’ Emergency ‘P2’ < 1 month
‘P3’ < 3 months ‘P4’ > 3 months
‘P6’ Patient choice to delay surgery.
- 7.1.5 The VS recognises that meeting timeliness standards is a major challenge, and that delay can occur at any step in the patient pathway, with both our health and social service under increasing strain.
- 7.1.6 TCC delays adversely mainly affect people who also face other health inequalities; people with a disability, a low income and/or ethnic minority groups.

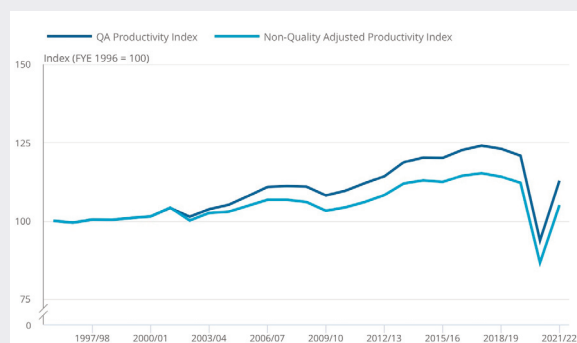
7.2 Demand and productivity

- 7.2.1 Our workload is rising as a greater number of people in the population are living

longer, with more comorbidities and more complex care needs.

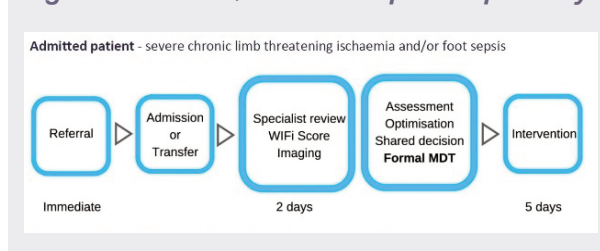
- 7.2.2 A report for the NHS Confederation by consultancy firm Carnall Farrar warns that, if demand continues to grow at its current rate, by 2029 the NHS will need to do 50% more work than it does now. ²
- 7.2.3 There is also the wider concern that productivity has fallen in hospitals as patient flow has stalled, Figure 7.1.
- 7.2.4 Lack of capital investment impacts on flow as equipment may be broken and maintenance schedules become more frequent.

Figure 7.1. Public sector healthcare productivity statistics published for financial years 1997/8 to 2021/22, England only, quality adjusted (Source: ons.gov.uk)



7.3 Critical limb threatening ischaemia

- 7.3.1 Treating patients with critical limb threatening ischaemia (CLTI) constitutes the largest proportion of the TCC workload of vascular networks.
- 7.3.2 Some people require immediate hospital admission for pain and sepsis control and/or revascularisation (‘P1b’).
- 7.3.3 Most people have a more stable presentation, minor tissue loss or ischaemic rest pain, and can be assessed and investigated through an urgent outpatient pathway (≤2 weeks/‘P2’).
- 7.3.4 This section will focus on admitted patients, Figure 7.2 and Table 7.1, as data are not routinely available for the outpatient patient group.

Figure 7.2 PAD-QIF admitted patient pathway.**Table 7.1. Percentage of arterial units in England achieving median time to treatment of ≤5 days for CLTI admitted pathways (NVR).**

ADMITTED PATIENTS	
Median time to revascularisation <5 days	
2017 – 2019 [Historical control]	46%
Jan 2021 – Dec 2021 [63]	62%
Jan 2022 – Dec 2022 [59]	61%

7.4 PAD-QIF CQUIN

- 7.4.1 The Peripheral Arterial Disease QIF (PAD-QIF) was launched by the VS in April 2019, with the aim of reducing the delays in assessment, investigation and revascularisation in patients with CLTI.
- 7.4.2 The PAD-QIF led to NHSE introducing the 2022–3 and 2023–4 CLTI-CQUIN programme in England. This programme rewards Trusts meeting the 5-day inpatient revascularisation target.³
- 7.4.3 Using the NVR data set of 2017–19 as the baseline, there has been improvement in time to revascularisation since the CQUIN was introduced.
- 7.4.4 A median time of <5 days to inpatient revascularisation being achieved in just over 60% of units (just under 50% of people revascularised within 5 days).
- 7.4.5 However, significant variation in time to treatment is observed between vascular units, Table 7.2, and Figures 7.3 and 7.4.
- 7.4.6 Where improvements have been made it has usually been through securing new funding or reallocating existing resources to meet the CQUIN target.

7.5 Barriers to improvement

- 7.5.1 Qualitative studies with primary care clinicians, patients and vascular clinicians

Table 7.2. Percentage of patients treated within 5 days on CLTI admitted pathway confirmed with raw data.

	Angioplasty or bypass ≤5 days	40% of patients	60% of patients	80% of patients
Number of units	2017 – 19 [69]	45/69	19/69	0/69
	2021 [63]	51/63	26/63	5/63
	2022 [59]	49/59	23/59	1/59

have identified multifactorial barriers to timely and appropriate referral and management of suspected CLTI.⁴⁻⁶

Barriers to change:

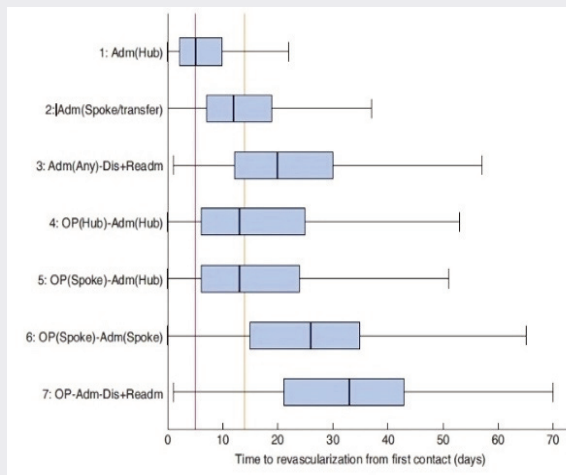
- Improving timeliness of revascularisation is not viewed as a management priority.
- Lack of organisational leadership support for change management.
- Inadequate resourcing including ward bed capacity, staffing, imaging, theatre lists and radiology capacity.

PAD-QIF CQUIN	BEST PERFORMING	MOST IMPROVED
	<ul style="list-style-type: none"> Oxford Royal Cornwall York Fife 	<ul style="list-style-type: none"> Tees Southampton Lothian

7.6 Structured referral pathways

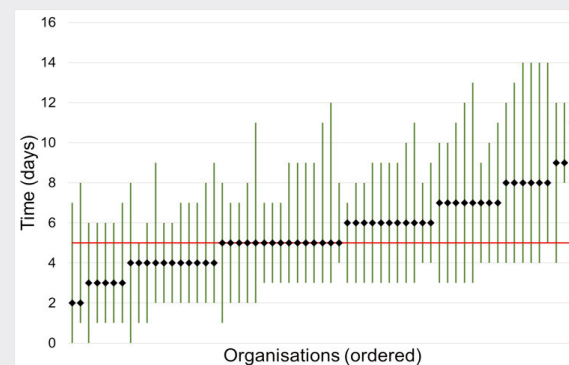
- 7.6.1 Strategies for addressing leg and foot ulcer pathway delays and recommended service levels are described by NICE (PAD 2012), GIRFT (Vascular report 2018), GVG (2019) and the VS (PAD QIF 2019).
- 7.6.2 Reconfiguration into centralised vascular networks may have contributed to reduced access, with inequities arising across catchment areas.⁴
- 7.6.3 The lack of awareness around PAD means patients often had multiple visits to primary care locations and/or emergency departments prior to coming across a clinician able to diagnose and refer to vascular surgery appropriately.⁶
- 7.6.4 We have multiple professional groups (e.g. GPs, practice and community nurses, podiatrists and PAs) assessing patients and making CLTI and leg ulcer referrals.

Figure 7.3 Time to revascularisation from first contact with vascular service by care pathway.



Median value (bold line), IQR (box) and range (error bar) excluding outliers are shown. The red line indicates 5 days and the orange line 14 days. Dis, discharge date; Readm, readmission; OP, outpatient.

Figure 7.4 Time from admission to revascularisation for people with CLTI admitted non-electively in 2023 across NHS organisations.



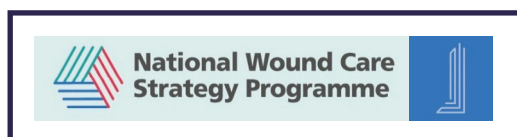
The black dot gives median number of days, while the green line shows the interquartile range. The red line is the PAD QIF target of 5 days. Graph limited to NHS organisations with a volume of ≥ 10 non-elective CLTI cases.

7.6.5 A documentary analysis of guidance on CLTI referrals found publicly available guidance was unclear and did not support primary care clinicians adequately.⁷

- Primary care clinicians wanted clear local referral pathways supported by the IT systems that they use.
- There was confusion regarding vascular expectations (e.g. ABPI) which need to be clarified locally.

7.6.6 Pathways need to select out at an early stage those requiring urgent treatment for CLTI from people with IC who need a longer-term management plan.⁸

7.6.7 The NWCSP in England and CfSD in Scotland have made good progress in engaging with healthcare professionals and standardising pathways:



National Wound Care Strategy Programme



Vascular surgery

7.7 Carotid endarterectomy (CEA)

7.7.1 Standards in POVS 2021 for carotid endarterectomy (CEA), Table 7.3.

Table 7.3 POVS 2021 CEA standards.

POVS 2021 CEA STANDARDS		
	Achievable	Minimum
Percentage of people receiving intervention ≤ 14 days of symptoms.	$>70\%$	$>50\%$
Number of CEAs performed annually (3 year rolling average, unit).	-	≥ 35
Risk adjusted procedural stroke and/or mortality <30 days of intervention.	$\leq 2\%$	$\leq 3\%$

7.7.2 In the last 5 years the number of units in the UK performing CEA has fallen from 73 to 65 in line with centralisation, Figure 7.5.

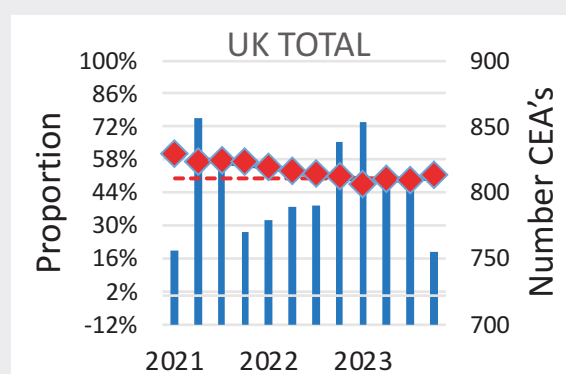
7.7.3 Carotid volumes fell sharply during the Covid-19 pandemic, with only a modest recovery, even allowing for a reduction in case ascertainment, Table 7.4.

Table 7.4. CEA cases on NVR 2011-23.

	2011	2021	2022	2023
NVR	6,000	4,162	3,260	3,324*
Estimated UK case ascertainment	-	96%	91%	93%

*Additional 250 patients had carotid stent (CAS)

Figure 7.5 NVR data for NHS patients receiving CEA surgery for years 2021-23.



The diamond is the proportion of CEA patients treated within 8 weeks of assessment. The bar is the annual number of CEAs performed. © HQIP (2024)

- 7.7.4 The fall in CEAs performed compared with pre-pandemic levels is approximately 25%.
- 7.7.5 Despite the year-on-year decrease in UK CEA procedures this has associated with worsening of the timeliness KPI, with only 49% of vascular units delivering CEA within a median of 14 days in 2024:

2020	2021	2022	2023	2024
78%	76%	66%	58%	49%

- 7.7.6 In six UK vascular units last year the median time from TIA/stroke to endarterectomy exceeded 20 days.

7.8 Wide variation in timeliness

- 7.8.1 Although 58% of units are achieving a median time to procedure of ≤ 14 days, there is a widespread variation.
- 7.8.2 One explanation for this could be a failure of identification or timely referral from the community to stroke services due to capacity problems within health networks. Further work would need to be done to confirm this.
- 7.8.3 When analysing the data it was possible to identify some trusts who were performing consistently at both ends of the spectrum.
- 7.8.4 It was also possible to identify some units that had made a sustained improvement in delivering the CEA KPI for timeliness.

CEA TIMING KPI	BEST PERFORMING	MOST IMPROVED
	<ul style="list-style-type: none"> London NW York Frimley 	<ul style="list-style-type: none"> Tees Devon & Exeter Gloucester

7.9 Abdominal aortic aneurysm (AAA)

- 7.9.1 Standards in POVS 2021 for elective abdominal aortic aneurysm (AAA), Figure 7.6.

Figure 7.6 POVS 2021 AAA standards.

INTACT AORTIC ANEURYSM SURGERY Time critical care delivery		
AAA diameter ≥ 5.5 cm	Achievable	Minimum
Referral to vascular service within 1 day	$\geq 85\%$	$\geq 75\%$
Percentage of people with AAA ≥ 5.5 cm assessed ≤ 2 weeks	$\geq 90\%$	$\geq 80\%$
Time from AAA reaching threshold (or referral) to treatment ≤ 8 weeks ^{1,2}	$\geq 80\%$	$\geq 60\%$
<small>1. Unless treatment deferred for medical optimisation or manufacture of a custom aortic stent graft. 2. People waiting ≥ 12 weeks with screen-detected aneurysm repair to be reported as a long waiter.</small>		

- 7.9.2 Large AAA is a TCC to prevent aneurysm rupture, although some people (i.e. people who are older, are frail, and/or have co-morbidities) will not benefit from repair and will be managed conservatively.
- 7.9.3 In 2023, less than one third of 61 UK vascular units achieved the target of 80% of patients with AAA treated within 8 weeks of assessment:

In 2023 NVR SoN report:

- 31% of people had AAA repair within the recommended 8 weeks.
- At four vascular units, 25% of patients waited more than 31 weeks.
- The median time from assessment to procedure has significantly increased from 9.9 weeks in 2019 to 12.3 weeks in 2023.

7.10 NHS AAA screening in men

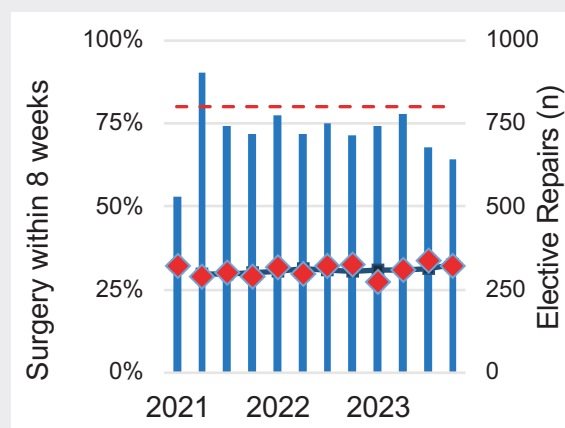
- 7.10.1 Achievement of the 80% target within the AAA screen detected population is similar to NVR data at 30% overall.
- 7.10.2 Five of the 38 UK screening programmes met the minimum 60% standard in 2022/23.
- 7.10.3 This can be compared with 9/38 meeting the minimum standard in 2019 and 1 in 38 meeting the achievable standard.

7.11 Reasons for AAA pathway delay

- 7.11.1 It is likely that inability to achieve the AAA standards is multifactorial in nature. Unlike CLTI/PAD-QIF there is a lack of data to support this statement.
- 7.11.2 Delays in access to a GP, waits for outpatient clinics and imaging that are well documented in the post pandemic NHS.

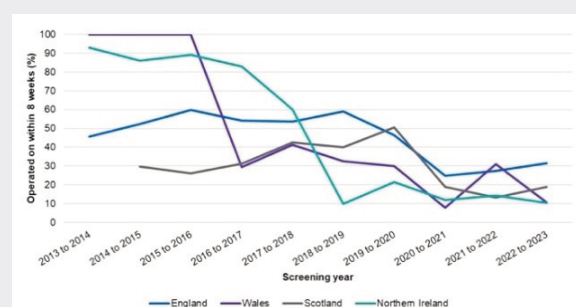
- 7.11.3 The UK has the lowest number of CT scanners among rich nations, creating a bottleneck for tests and delays.
- 7.11.4 Further delays follow due to lack of operating theatre or ICU bed capacity.
- 7.11.5 Covid recovery has had an impact, however, it must be noted that 28 of 38 (74%) AAA screening programmes were unable to deliver the minimum timeliness standard prior to 2020.
- 7.11.6 Further evaluation of AAA pathways is needed to address barriers, increase resilience and improve productivity.
- 7.11.7 Consideration should also be given to whether the targets are deliverable without compromising other priorities of a vascular service.
- 7.11.8 Timeliness of AAA surgery has deteriorated, Figure 7.7, including for screened men, Figure 7.8.

Figure 7.7 NVR data for NHS patients receiving AAA surgery for years 2021-23



The diamond is the proportion of patients treated within 8 weeks of assessment. The bar is the annual number of infra-renal AAA repairs. © HQIP (2024)

Figure 7.8 NHS AAA screening: Men operated within 8 weeks, by UK country.



7.12 Summary and way forward

- 7.12.1 A 'quick win' is for good practice from units achieving KPIs, especially those that have made improvements, to be disseminated more widely.
- 7.12.2 A framework for improving and monitoring timeliness has already been developed by the Society, the PAD-QIF supported by the PAD-QIF CQUIN.
- 7.12.3 This quality improvement work could be adapted and refined to provide a framework for CEA and AAA pathways.
- 7.12.4 Many barriers are generic and have been identified as a cause of delays in the evaluation of the PAD-QIF:
- Access to healthcare
 - Lack of structured referral pathways
 - Lack of people to track patients
 - Outpatient capacity
 - Imaging delays
 - Theatre capacity and prioritisation
- 7.12.5 Change will not happen without national vascular TCC standards, as for people with cancer.
- 7.12.6 There is also a data problem, as NHS statistics do not separate vascular and general surgery outpatient work.

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8. UNWARRANTED CLINICAL VARIATION

‘Care should not vary illogically from clinician to clinician or from place to place.’

Crossing the Quality Chasm: A New Health System for the 21st Century (2001)

8.1 Unwarranted clinical variation

- 8.1.1 John Wennberg defined unwarranted (‘unintended’) variation as ‘variation that cannot be explained on the basis of the evidence, medical need, illness severity or patient preference’. ¹
- 8.1.2 Unwarranted variation addresses the appropriateness of care and whether it is ‘provided in the right way’, and ‘in the right amount’, to address patients’ needs.
- 8.1.3 Unwarranted variation can be classified into 3 categories, Figure 8.1. ¹

Figure 8.1 Classification system.

Evidence practice differs from available quality evidence, or a failure to act on new evidence.

Capacity resource allocation and/or organisational design prevent accepted treatment.

Agency providers’ needs and preferences are put above those of patients.

8.2 Why is it important?

- 8.2.1 Reducing unwarranted variation not only translates to better and faster care for patients, but better value for taxpayers.
- 8.2.2 Tackling variation reduces overuse of **lower-value interventions**; treatment of limited value or treatment to people who are only mildly affected and get little benefit.
- 8.2.3 Underuse of **high-value interventions** tends to be greater in more disadvantaged groups in the population, thereby worsening health inequalities.

8.3 Identification

- 8.3.1 Some variation between regions and services is inevitable due to randomness and the small numbers of patients being treated for some conditions.
- 8.3.2 Shared decision making with a fully informed patient inevitably means that different treatments are chosen by different people at different times.
- 8.3.3 Where uncertainty or equipoise for treatments exists there will be unavoidable variation observed.
- 8.3.4 Variation can be compared across regions, across providers, or against a defined standard in three main ways:
- **Processes** (e.g. pathways)
 - **Resources** (e.g. workforce)
 - **Outcomes** (e.g. quality of life)

8.4 Reducing unwarranted variation

- 8.4.1 Atsma *et al* suggest five ways to reduce unwarranted variation: ²
- **Collaboration** between clinicians with reflective practice, i.e. MDTs and morbidity and mortality meetings.
 - **Mutual learning** within and between providers (networked models of care).
 - **Clinical standards** (pathways) for conditions where evidence exists (evidence-based clinical guidelines).
 - **Electronic datasets** feeding variation data back to hospitals to drive improvement (GIRFT, NCIP, Registries).
 - **Learning** providers integrate new knowledge from research.

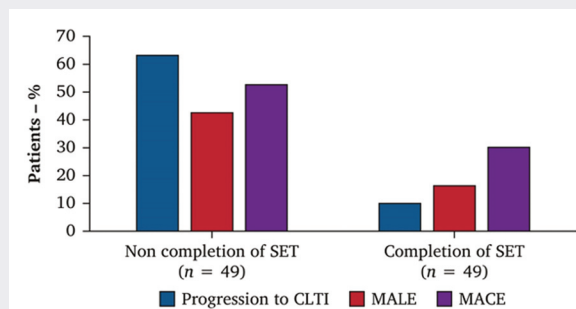
- 8.4.2 These cares can be combined into the concept of a ‘learning health system’. ³

“a health infrastructure characterised by evidence-based care that ensures proper decision-making for each patient and provider and generates scientific evidence as a natural byproduct of the care process”.

8.5 Supervised exercise programmes for intermittent claudication

- 8.5.1 Evidence-based guidance from NICE (CG147) recommends supervised exercise

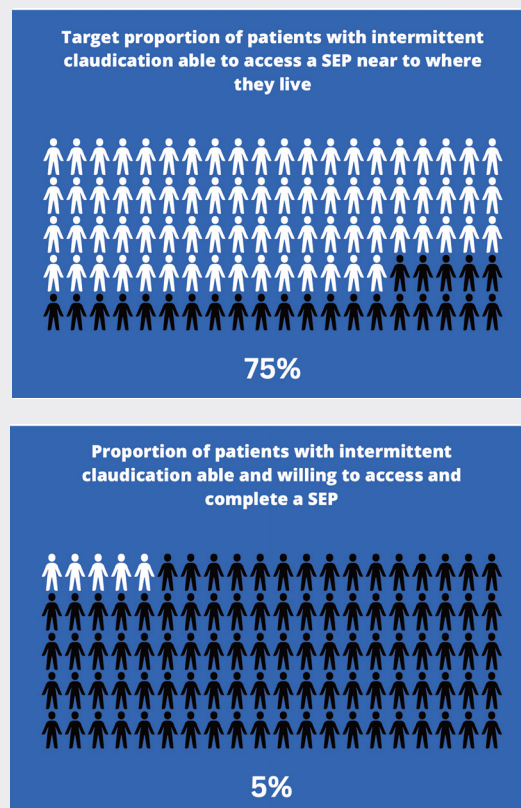
Figure 8.2. Long-term outcomes based on completion or non-completion of a supervised exercise programme.



programmes (SEP) as the first-line treatment for people with intermittent claudication (IC), Figure 8.2.

- 8.5.2 Provision of SEP is inequitable and remains stagnant, with only 25% of vascular units being known to have access, Figure 8.3, with in addition a clear North/South divide. ⁴
- 8.5.3 Even for vascular networks with SEP access, this is often via a central site and not easily accessible to those served by networked hospitals.
- 8.5.4 The PAD James Lind Alliance Priority Setting Partnership ⁵ and the PAD-QIF have highlighted the importance of improving SEP availability.
- 8.5.5 The QIF sets a target that >75% of people with IC should be able to access SEP close to where they live.
- 8.5.6 To achieve this target, better quality data is needed that can be acted upon, either via the inclusion of information on SEP availability and delivery in the National Vascular Registry or via the development of a bespoke SEP registry.
- 8.5.7 We also need collaboration with primary care networks to deliver SEP in community settings (Figure 8.3).
- 8.5.8 For people living with intermittent claudication, not having access to SEP is detrimental to their walking distance and quality of life.
- 8.5.9 We also know that being active is beneficial for cardiovascular health and the enormous cost of stroke care, estimated at £43 billion in 2025, and lives lost to heart attacks (68,000 deaths each year). ⁶
- 8.5.10 This is a good example of how reducing unwarranted variation saves money, both in the short and long term, ensures resources are shared equitably between regions and improves outcomes.

Figure 8.3. Target population and access to supervised exercise programme (SEP) for people living with intermittent claudication.



8.6 Type B aortic dissection

- 8.6.1 Acute aortic dissection is a condition with high morbidity and mortality and is becoming more common. ⁷
- 8.6.2 There is worldwide variation in the treatment of uncomplicated Type B aortic dissection (TBAD), in part due to insufficient published evidence for treatment to prevent dilatation in the subacute phase (2 weeks to 6 months). ⁸
- 8.6.3 Variation is also introduced when people with uncomplicated TBAD are managed by emergency medicine, cardiology and general surgery and not in a specialist vascular or cardiac centre.
- 8.6.4 Knowledge about aortic dissection is an issue in emergency services. Over one-third of patients with dissection are misdiagnosed. ⁸
- 8.6.5 Follow-up surveillance regimes in units are inadequate in many regions. Although many centres have dissection clinics, often there is not an appointed vascular expert to take on the complex long-term care of these patients.

8.7 TEVAR for uncomplicated TBAD

- 8.7.1 NVR data from 2016–2021 shows significant variation in the treatment of uncomplicated TBAD with thoracic endovascular aortic repair (TEVAR) in the UK: ⁹

Thoracic aortic stent in Type B aortic dissection

- Half of the high-volume units were situated in London.
- 6 centres performed 11-25 cases, and 20 units performed 1-10 cases.

- 8.7.2 The variation in practice is exacerbated by several factors:

- **Limited coding** in routinely collected datasets making evaluation of activity and outcomes difficult.
- **Uncertainty** in what constitutes best practice in management.
- **Wide variation** of different aortic stenting approaches (e.g. TEVAR, STABILISE, PETTICOAT).

8.8 Reducing variation

- 8.8.1 There is a need for multi-centre clinical research studies to develop evidence-based practice.
- 8.8.2 Structured safe pathways to facilitate best treatment, by specialist teams, utilising the best evidence, are essential elements in optimal care.
- 8.8.3 The acute aortic dissection toolkit has been launched by NHS England to improve patient care and reduce unwarranted variation, Figure 8.4.

Figure 8.4. NHSE acute aortic dissection toolkit principles. © NHS England.

Principle 1	Regional Governance
Principle 2	Co-ordination through a Regional Multi-Disciplinary Team and a Multi-Disciplinary Meeting
Principle 3	Regional rota & single point of contact
Principle 4	Timely and reliable image transfer
Principle 5	Safe transfer
Principle 6	Specialist treatment for all acute aortic dissections
Principle 7	A regional education programme

- 8.8.4 The toolkit is being implemented by region and England and has been widely shared with the other UK nations.

- 8.8.5 As part of toolkit implementation and to share learning and reduce variation, aortic centres should set up a robust and specialised aortic multidisciplinary team.

- 8.8.6 This team should both deliver acute treatment and define the follow-up regime for treated patients and for those in a surveillance programme.

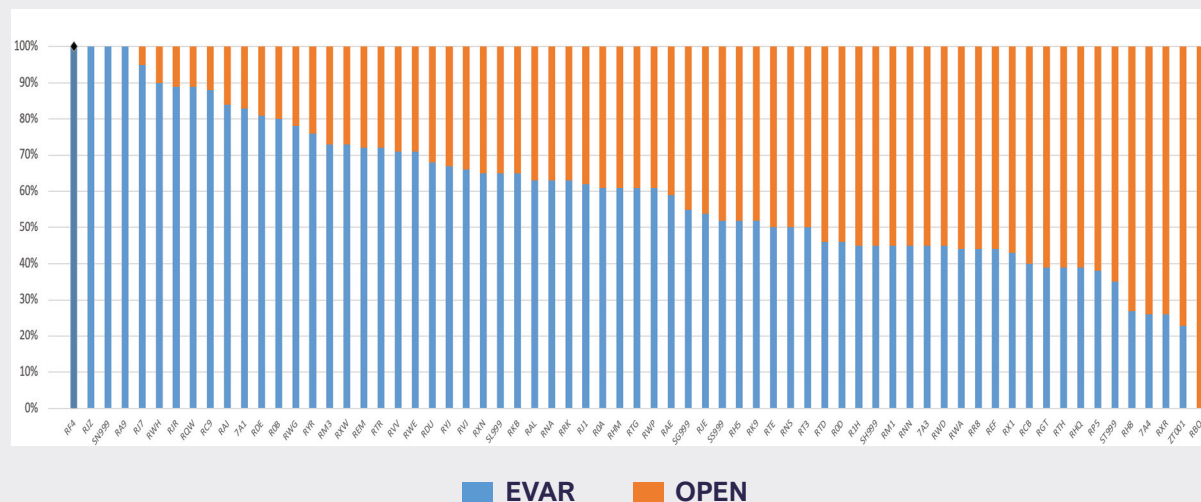
8.9 Elective AAA repair

- 8.9.1 NICE guidance (NG156) states that open abdominal aortic aneurysm (AAA) repair should be offered unless contraindicated by abdominal co-pathology, anaesthetic risks and/or medical comorbidities.
- 8.9.2 POVS 2021 recommends that elective infra-renal open (OSR) or endovascular (EVAR) repair can be performed at all arterial centres provided there are sufficient case volumes.
- 8.9.3 NVR data show that nationally 40% of AAA repairs are OSR and 60% EVAR.
- 8.9.4 There is, however, considerable variation across units, with some performing all EVAR and some all open, Figure 8.5. ¹⁰
- 8.9.5 Reasons for this variation are complex and may include a lack of expertise or facilities, individual bias, or complex referral patterns.
- 8.9.6 Consequences of this may be unrecognised and include increased complication rates, increased re-admission, or high turnaround rates.
- 8.9.7 It is likely that there is also variation in referral for more specialised supra-renal aortic surgery and custom-made aortic stent grafts (FEVAR and BEVAR).

8.10 Varicose veins

- 8.10.1 NICE guidance (CG168) recommends interventional treatment for patients with varicose veins irrespective of the presence of complications.
- 8.10.2 There is evidence of cost effectiveness and improvement in quality of life following minimally invasive treatment options for varicose veins.
- 8.10.3 Despite the documented evidence, there is significant geographical variation in access to varicose vein treatment in England due to commissioning restrictions.
- 8.10.4 A review in 2023 showed that only 36% of CCG/ICB policies were compliant with NICE guidelines.¹¹

Figure 8.5. Variation in the proportion of AAA repairs performed by endovascular aortic stent graft (EVAR) and open surgical repair (OPEN) across organisations.



8.10.5 GIRFT vascular data from 2023–24 show significant variation between regions and organisations in the delivery of varicose vein treatments across England (see online supplement):

- Crude annual rates for procedures varied up to 400% between regions.
- The Northeast had a 3-fold higher rate of procedures than the Southeast.

8.10.6 GIRFT vascular data also show an unwarranted variation in the incidence of DVT and PE post varicose vein procedures (see online supplement).

8.11 Why is there such variation?

8.11.1 Varicose veins may be viewed as low priority and NICE guidelines too costly to implement, leading to these differences.

8.11.2 The introduction of interventions not normally funded (INNF) with criteria-based access (CBA) and prior approval (PA) can act as a form of rationing.

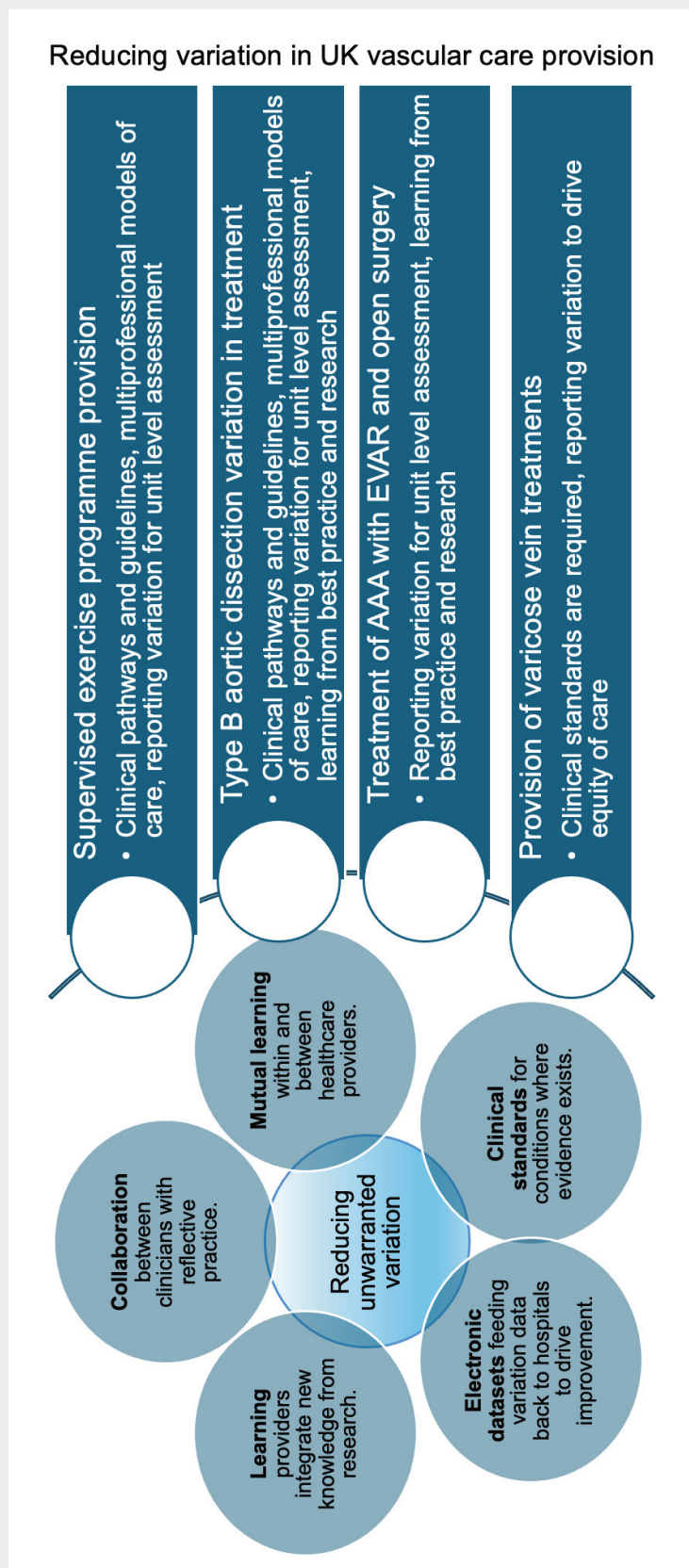
8.11.3 In venous disease, unwarranted variation contributes to morbidity for patients and to the estimated £2 billion cost of treatment for venous leg ulcers.

8.11.4 The steps needed to reduce unwarranted variation are summarised overleaf, Figure 8.6.

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Figure 8.6. Summary of reducing unwarranted variation in vascular surgical provision.



9. SUSTAINABLE VASCULAR SURGERY

‘Action is needed at every step of the pathway – we are facing a climate emergency – the current status quo is not a viable option.’

9.1. Introduction

- 9.1.1 Modern healthcare consumes significant resources in terms of carbon and affects the environment.
- 9.1.2 There is now substantial evidence that to continue with the same level of consumption will make what we do unsustainable, and compromise healthcare for future generations.
- 9.1.3 We are already experiencing extreme weather events more frequently that threaten to undermine recent health gains (i.e. storms, floods and heatwaves and the spread of infectious disease).
- 9.1.4 For our speciality, unchecked climate change will contribute to the burden of cardiovascular disease.
- 9.1.5 Reaching the UK ambitions under the Paris Climate Change Agreement could see lives saved; around 100,000/year from healthier eating and 38,000/year from a more physically active population.

9.2 'Carbon footprint'

- 9.2.1 The carbon footprint of the NHS is shaped as much by models of care and clinical behaviours as it is by the buildings, medical devices and technologies.
- 9.2.2 A typical NHS operation produces 150–170 kg CO₂ equivalent to the CO₂ produced driving 450 miles (i.e. London to Edinburgh) in a petrol fuelled car.¹

- 9.2.3 Progress has been made with a 26% reduction in emissions from 1990 levels.

- 9.2.4 To close the gap to 'Net zero' the NHS will need to remove 6.1 MtCO₂ from the NHS Carbon Footprint and 24.9 MtCO₂ from the NHS Carbon Footprint Plus, Figure 9.1.

- 9.2.5 To provide perspective on the challenge that this work involves:

- Healthcare contributes roughly 4-5% of global CO₂ emissions; twice that of aviation and container shipping.²
- NHS England's CO₂ emissions are 4% of England's total carbon footprint.
- Approximately 3.5% (9.5 billion miles) of all road travel in England relates to patients, visitors, staff and suppliers to the NHS; around 14% of the system's total emissions.

- 9.2.6 For vascular surgery we have limited information around our carbon footprint; however, the following are all implicated in CO₂ production:

- **Travel**
- **Waste**
- **Carbon emissions** (including anaesthetic gases)
- **Medical device usage** (including ancillaries such as diathermy and angiographic catheters)

- 9.2.7 Surgical procedures contribute 21–30% of total NHS waste production, for example the waste in Figure 9.2.

9.3 Acting now

- 9.3.1 Sustainability will play an increasingly important role in shaping the future of health services.^{3,4}
- 9.3.2 Intervention on climate change has been shown to directly address health inequalities.
- 9.3.3 The Royal Colleges of Surgery have raised awareness with the **inter-collegiate green surgery checklist**.⁵

Figure 9.1 NHS Carbon footprint

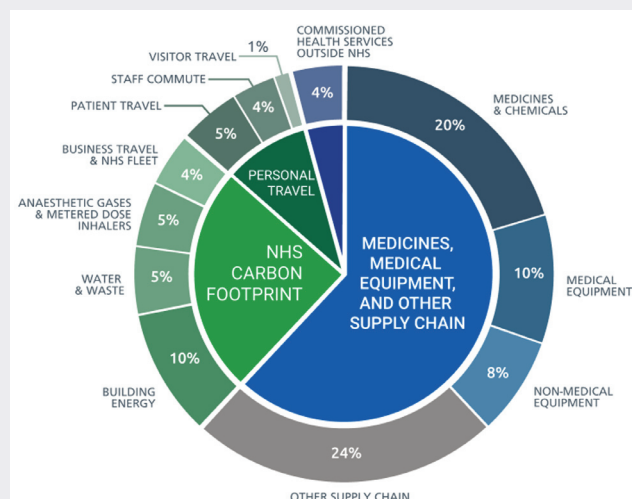


Figure 9.2 Waste generated from complex endovascular abdominal aortic aneurysm repair case (Courtesy of James McCaslin)



Figure 9.3 Six simple changes vascular surgery can make to becoming Greener.



- 9.3.4 We must consider within vascular surgery how we can act to be more sustainable:
- Focus on disease prevention.
 - Stop performing procedures of limited clinical value, including those with little impact on quality of life.
 - Reduce consumption, re-use and recycle
 - Work with industry partners to maximise potential CO₂ reduction
- 9.3.5 Prevention is preferable to treatment, a priority being access to **supervised exercise programmes (SEP)** for people with intermittent claudication.
- 9.3.6 We can impact the carbon footprint of our care in multiple areas of the patient pathway. Six simple changes which require little to no resources, Figure 9.3.

9.4 Legislation

- 9.4.1 Each Acute Hospital Trust and Integrated Care System (ICS) in England has been asked to produce a 'green plan'.
- 9.4.2 The public sector is aiming for net zero carbon by 2030, with NHS England contributing a 34% reduction in CO₂ emissions.⁵

9.5. Our response as a Society

- 9.5.1 Our aim is for sustainability without compromising the excellent standards of patient care that we deliver.
- 9.5.2 We will seek engagement with our industry partners to address packaging and supply chain for medical devices.
- 9.5.3 At this year's ASM in Brighton we will bring together a session to look at some of the solutions and our UK experience.
- 9.5.4 We will publish a tool kit in the Journal of the Vascular Societies of Great Britain and Ireland (JVSGBI) to help vascular units make positive changes.

- 9.5.5 We are undertaking work to assess the carbon impact of our most frequently performed procedures.
- 9.5.6 We support the NHS aim of delivering 'net zero' by 2045.

9.6 Sustainable healthcare

- 9.6.1 Sustainable healthcare involves ensuring the ability to provide good quality care for future generations by balancing the economic, environmental and social constraints and demands within healthcare settings. ⁶
- 9.6.2 A sustainable healthcare system maintains population health, reduces disease burden and minimises use of healthcare services, Figure 9.4.
- 9.6.3 Organisations must understand their broader impacts across economic, environmental and social domains.
- 9.6.4 To improve sustainability, organisations must ensure that their use of resources does not exceed available supplies, and that their impacts do not negatively affect the wider community, the environment or future generations.
- 9.6.5 We must invest now in longer-term strategies to allow future reduction in the CO₂ footprint whilst maintaining high quality care delivery.
- 9.6.6 To achieve this ambition will require work across multiple fronts to reduce the carbon footprint of the care we deliver. In addition, investment will be needed in green energy, green travel and carbon capture. ⁷

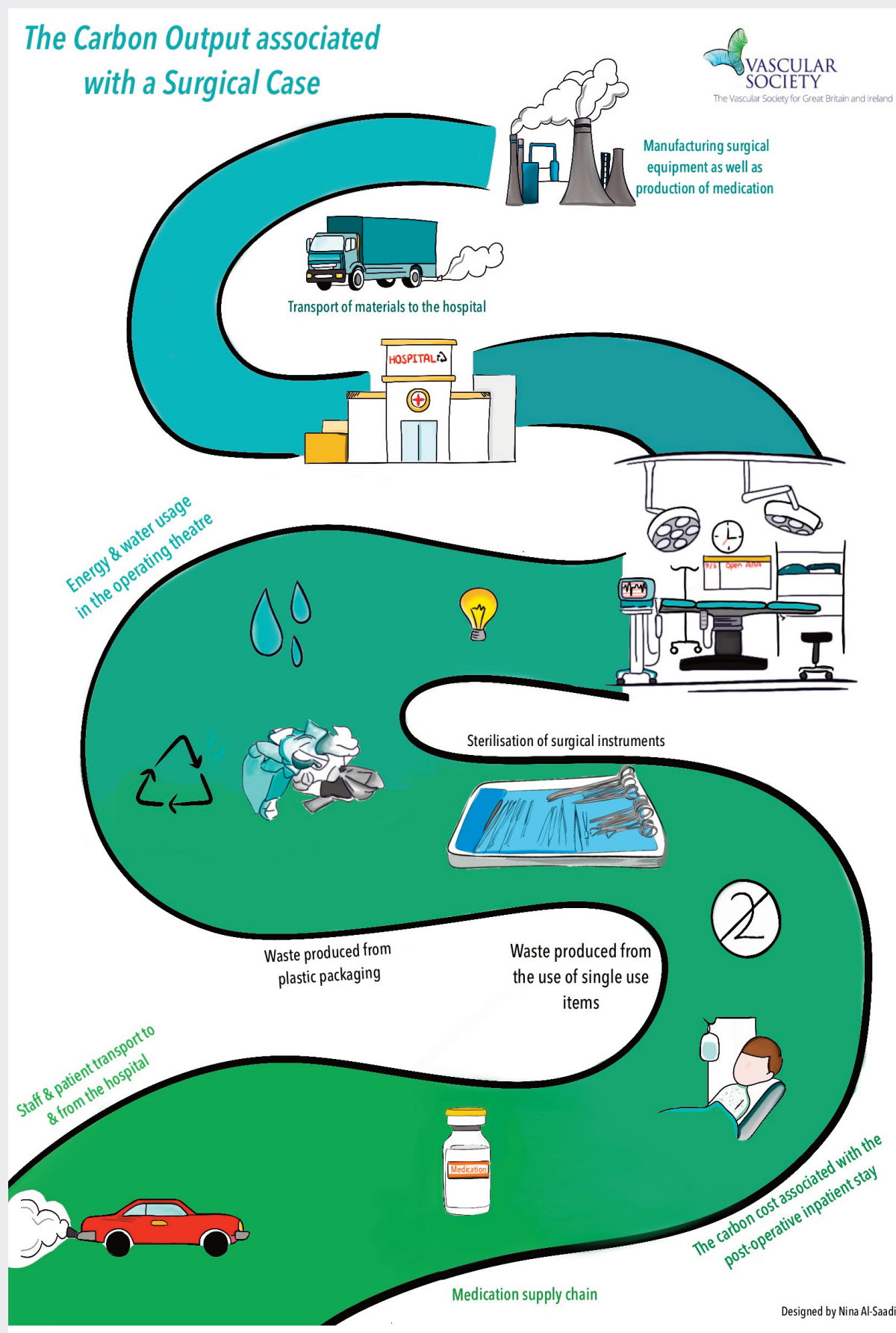
9.7 Summary

- 9.7.1 We are in a climate emergency and action is urgently required to prevent a healthcare disaster.
- 9.7.2 The Vascular Society is committed to climate action via multiple short- and longer-term strategies.
- 9.7.3 Members are strongly encouraged to make the six simple changes immediately.
- 9.7.4 We must have a plan for sustainability which is embedded in our culture and develop an enabling environment to do this.

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Figure 9.4. Carbon output associated with a single surgical procedure.



10. PERSON CENTRED CARE

‘... the quality of care that people receive can be changeable, preventable illness is widespread and health inequalities are deep-rooted.’

NHS Five Year Forward View (2014)

10.1 What is PCC?

- 10.1.1 Person centred care (PCC) recognises that each person is a unique individual with their own preferences, values and needs which should be reflected in the personalisation of the care that they receive. ¹
- 10.1.2 **Empowering people;** personalised care provides people with choice and control over the way their care is planned and delivered, based on what matters to them.
- 10.1.3 Collaborative care requires health and social care professionals to work collaboratively with patients, empowering them to be involved in decisions around their healthcare, treatment and support.
- 10.1.4 The Health Foundation’s “Person-Centred Care Made Simple” identifies four key principles of PCC, Figures 10.1 and 10.2. ²

Figure 10.1 Person centred care (PCC).

Affording people dignity, compassion and respect.

Offering coordinated care, support or treatment.

Offering personalised care, support or treatment.

Supporting people to recognise and develop their own strengths and abilities to enable them to live an independent and fulfilling life.

- 10.1.5 **Ensuring equal access;** reasonable adjustments should be made to ensure patients should have equal access to vascular services, regardless of their medical condition, demographics, socioeconomic status or geographical location.

Figure 10.2 The four elements that make up person centred care. Based on The Health Foundation Person Care Made Simple.



- 10.1.6 **Addressing variability to access;** any issues must be identified and corrected with the input of patients to ensure equitable care for all patients (see Section 8).

10.2 Why is PCC important?

- 10.2.1. Evidence suggests that engaging patients in their care and supporting people to manage their own conditions can improve clinical outcomes and patient experience, leading to potential efficiency savings. ³
- 10.2.2. When patients are actively involved in decisions and education about their care, treatment adherence often improves, leading to better management of conditions and reduced hospital admissions. ⁴
- 10.2.3. **Enhanced services;** tailoring services to meet patient needs is more effective when patients are actively involved in the commissioning and design processes.
- 10.2.4. By incorporating their input, services can be better aligned with their needs and preferences, Figure 10.3. ²
- 10.2.5. **Increased satisfaction;** when patients feel heard and valued, their satisfaction with care increases, positively influencing staff performance and morale, leading to better relationships between patients and healthcare providers. ⁵

Figure 10.3 Person centred care. © Ian Chetter.



10.3 Current guidelines

- 10.3.1 The NHS should aspire to deliver high quality care 'for all, all of the time'.
- 10.3.2 This includes care that treats people with dignity, compassion and respect, making their experience of services a positive one.
- 10.3.3 It is essential to be aware of every patient's level of understanding and tailor communication to meet the needs and preferences of each patient.
- 10.3.4 National bodies emphasise the importance of PCC and provide guidance on its implementation:

The **NHS Long Term Plan** (2019) recognised PCC as one of five major practical changes to the NHS and sets out a vision where 'people will get more control over their own health, including personal health budgets'.⁶

NHSE Workforce, Training and Education has developed an education and training framework that articulates what PCC means

and how to develop and support the workforce.⁷

UK government's 2023 mandate to NHSE underscores the significance of healthcare staff possessing compassion, values, and behaviours that support PCC.⁸

NICE guideline NG197 covers how to make shared decision-making part of everyday care in all healthcare settings.⁹

CQC Regulation 9 further emphasises the necessity for providers to deliver appropriate PCC and treatment based on individual assessments of needs and preferences and providing support to enable informed decision-making about care and treatment options.¹⁰

10.4 Patient experience

- 10.4.1 Patient experience is a key marker of the quality of healthcare and is prioritised in numerous policy documents.
- 10.4.2 Healthcare professionals within vascular MDTs are undoubtedly dedicated to providing PCC; however, tracking 'evidence' for how well PCC is undertaken is challenging. Much of this care will be delivered through one-on-one interactions with patients during their appointments and at MDT meetings.
- 10.4.3 Public satisfaction in the NHS – which stood at a record high in 2009 – is now at its lowest ever (Darzi, 2024).
- 10.4.4 Using patient experience as an outcome measure can significantly increase patient satisfaction, leading to greater engagement in their own care and better health outcomes.
- 10.4.5 Involving patient groups and leveraging the '*patient knows best*' approach further enhances the relevance and effectiveness of services, ensuring they are tailored to the specific needs and preferences of different patient populations.
- 10.4.6 Insights from patient experiences; a better understanding of people's experiences will provide crucial insights into areas where services are performing well and where there are opportunities for improvement.

10.4.7 Sources of patient feedback include:

- **Patient Reported Outcome Measures (PROMs):** All patients should have the opportunity to provide PROMS.¹¹
- **Surveys** (e.g. 'Friends & Family Test'): Surveys of patient experience of healthcare can identify issues we can then address.
- **Complaints and Compliments:** Analysing these in a measured way provides an opportunity to gain a comprehensive view of problem areas to be investigated and/or addressed.
- **Patient feedback for revalidation:** This is a GMC requirement for all consultants once per revalidation cycle (5 years).
- **Patient groups**, as are needed for all clinical research studies. This can also include patient led charities and associations.

10.4.8 Utilising complaints and compliments monitoring and Serious Untoward Incident (SUI) reports can be valuable in assessing and improving patient-centred care by highlighting areas needing attention and facilitating targeted interventions.

10.4.9 Litigation: Clinical negligence claims are at record levels, and significant areas of concern remain.

10.4.10 The NHS is paying nearly £3 billion in compensation for care failures, which is about 1.7% of its total budget.

10.4.11 The truth is that, currently, patient feedback is not consistently collected. This needs to change.

10.5 Health inequalities

10.5.1 The absolute and relative proportion of people's lives spent in ill-health has increased in the last decade, for example variation in age, people living with diabetes and social deprivation, Figure 10.4.

10.5.2 At the start of 2024, 2.8 million people were economically inactive due to long-term sickness, and more than half of the current waiting list for inpatient treatment are working age adults.

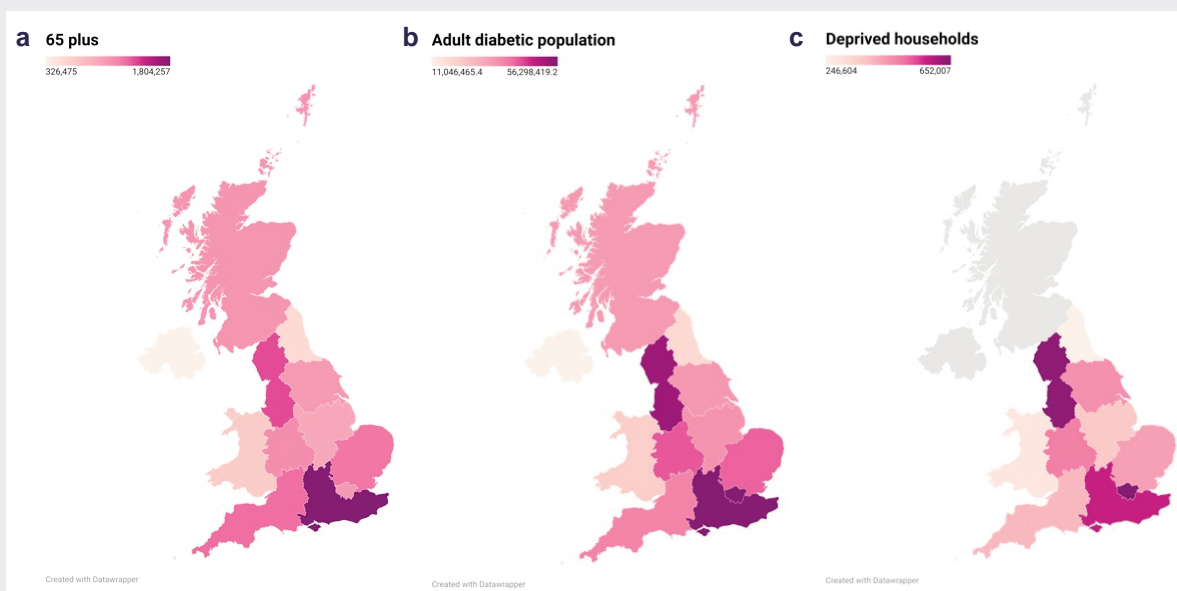
10.5.3 Many of the social determinants of health – such as poor-quality housing, low income, insecure employment – have moved in the wrong direction over the past 15 years with the result that the NHS has faced rising demand for healthcare.

10.5.4 There has been a surge in multiple long-term conditions:

- Childhood obesity rates have risen.
- The prevalence of diabetes across the whole population has increased from 5.1% in 2008 to 7.5% in 2022.

10.5.5 The public health grant has been slashed by more than 25% in real terms since 2015 and the UK's main public health institution was abolished, split into two new bodies, in the middle of Covid-19 pandemic.

Figure 10.4 Overview of regional variation in the UK population density by people aged 65 years and older (a), the prevalence of diabetes (b), and social deprivation (c) (no data available for Scotland or NI).



- 10.5.6 The power of prevention is illustrated by the achievements of the **NHS Diabetes Prevention Programme**, which reduces the risk of type 2 diabetes by nearly 40%.
- 10.5.7 The 9-month programme is available face to face or via a digital platform.
- 10.5.8 There are clear and consistent gaps across patient pathways, particularly in the prevalence of modifiable risk factors, inconsistency in accessing elective hospital services, and poorer health outcomes in the most deprived areas.¹²
- 10.5.9 People living in poverty are getting sicker and accessing services later. People who live in the most deprived areas of England are twice as likely to wait more than a year for non-urgent treatment. This leads to more acute illness and poorer outcomes.
- 10.5.10 There are also concerning disparities in access to care and outcomes for homeless people, those with learning disabilities and carers.
- 10.5.11 To truly deliver PCC, we must address health inequalities. The NHS Long Term Plan placed this at the heart of NHS goals for this decade.¹³
- 10.5.12 This includes simple interventions like providing interpreter services and multilingual patient information, as well as broader efforts like engaging with deprived communities to promote smoking cessation.³

10.6 Research participation

- 10.6.1 Recently, the Vascular Society in association with the James Lind Alliance conducted a national priority setting process that has defined the agenda for vascular research over the next five years.¹⁴
- 10.6.2 This inclusive process ensured patients had an equal voice to clinicians in agreeing shared priorities to target for future research.
- 10.6.3 All patients should be provided an opportunity to be involved in research.
- 10.6.4 Studies demonstrate that patients admitted to more research-active hospitals have; lower risk-adjusted mortality for acute admissions;¹⁵ more confidence in staff and are better informed about their condition.¹⁶

10.7 Involving patients in service design

- 10.7.1 Patient involvement in service design helps us to understand what matters most to patients and subsequently tailor services to meet those needs and preferences.
- 10.7.2 Tailoring services to patient needs and preferences includes offering flexible appointments, adapting communication styles i.e. options for telephone consultations, and providing additional support for specific patient populations such as interpreters and other reasonable adjustments.
- 10.7.3 **Integrated Care Systems (ICSs)** should seek the experiences, needs, preferences and aspirations of the people and communities they serve, to deliver better health and well-being, improved quality of services and sustainable use of resources.

Statutory guidance

<https://www.england.nhs.uk/long-read/working-in-partnership-with-people-and-communities-statutory-guidance/>

10.8 Shared decision making

- 10.8.1 Shared decision-making means supporting patients to understand vascular conditions and their management options.
- 10.8.2 This includes information about all options available, with details about associated risks, benefits and consequences.
- 10.8.3 Decisions about a preferred course of action should be founded on good quality, evidence-based information, unbiased opinion through MDT and patient needs and preferences.¹⁷
- 10.8.4 Gender biases, language barriers, digital access issues, socioeconomic and financial constraints can impair understanding of treatment and engagement with management of their condition. Identifying and addressing these issues is crucial for delivering equitable healthcare.
- 10.8.5 **Legal implications;** shared decision-making is now also a legal requirement following the Montgomery ruling.¹⁸
- 10.8.6 Shared decision-making tools have been developed for AAA and varicose veins. We would like to see their development across the spectrum of conditions.

NHS England shared decision tools

- Varicose veins
- Abdominal aortic aneurysm

10.9 Enhancing accessibility

- 10.9.1 Documentation should include a lay summary. Services should use visually engaging infographics that simplify complex topics and informative leaflets designed to provide clear guidance and support.
- 10.9.2 Information should be available in multiple formats, providing patients with choices to suit their needs and preferences for accessing information, whilst recognising challenges such as digital exclusion.
- 10.9.3 Service providers should direct patients to the appropriate resource to support their management (see supplementary online materials for a suggested list).
- 10.9.4 Disabled people, those with long-term conditions, and women are disproportionately affected by poor communication.

10.10 Advance care planning

- 10.10.1 Vascular disease may be associated with reduced life expectancy. It is crucially important to engage vascular patients in proactive future-focused conversations to guide future care and actions, particularly in the event of a change in health status.
- 10.10.2 This should be done with the support of palliative care doctors and nurses who are experts in working with patients in this area and developing advance care plans.
- 10.10.3 Clinicians should respect and document patient preferences, including end of life wishes, and engage these at the appropriate time.

10.11 Awareness of vascular disease

- 10.11.1 We must increase awareness of vascular disease amongst patients and wider stakeholders at local and national levels.¹⁹
- 10.11.2 Vascular MDTs and patients must be supported to engage with local and national-level campaigns to promote better and equal access to vascular services, including engagement with commissioners, policymakers and parliamentarians.
- 10.11.3 This can support change in the system; highlight current and upcoming challenges; drive better support for vascular services; and enable greater awareness and better outcomes for patients.

- 10.11.4 **Supportive Resources and Networks;** online resources, patient groups, patient “champions” and charities all have a role to play in helping patients to learn about their condition and treatment options.

- 10.11.5 The Circulation Foundation website is an invaluable resource for people with vascular disease:
<https://www.circulationfoundation.org.uk>

10.12 Self-management and education

- 10.12.1 People living with vascular conditions may be suitable following assessment for **supported self-management**, Figure 10.5.
- 10.12.2 This requires increasing the knowledge, skills and confidence a person has in managing their own health. Interventions such as peer support, education, and health coaching.^{20, 21}
- 10.12.3 The **Extended Vascular Specialist Team**, comprising nurses, clinical vascular scientists, physiologists, OTs, dieticians, podiatrists, ACPs and physiotherapists, all play a crucial role in patient care and support.
- 10.12.4 With their specialised training and experience, they also promote education and advocacy, guiding patients and their families in understanding treatments and lifestyle changes needed to manage vascular conditions effectively. Effective cross discipline communication is essential.

10.13 Summary

- 10.13.1 PCC should be a ‘golden thread’ which runs throughout the provision of vascular services from national and local service from design to delivery to quality assurance.
- 10.13.2 The ‘patient voice’ ensures processes are open and transparent when reviewing complaints and learning from them.
- 10.13.3 PPC involves patients as partners, not only in their own care but in the design of clinical pathways to build in patient choice, dignity and respect.
- 10.13.4 Patient participation in these processes provides invaluable insights as their first-hand experiences highlight practical areas for improvement and can ensure transparency and build trust.

Figure 10.5 All-party Parliamentary Group on Vascular and Venous disease recommendations for supported self-care (2023).



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11. DATA TO MONITOR WHAT WE DO

‘But in Paterson’s years of practice, there were many regulations and guidelines in place which were disregarded or simply ignored, and not just by him.’

Right Reverend Graham James, Paterson Report 2020

11.1 Why important?

- 11.1.1 The importance of outcome data, open reporting and acting on the findings, is a theme that runs through the Shipman enquiry (*Smith*), the Mid Staffordshire Public Inquiry (*Francis*), the Independent Inquiry into the Issues raised by Paterson (*James*) and the independent medical devices and medicines safety review (*Cumberledge*).
- 11.1.2 Accessible outcome data is important to inform patient choice. In the words of Right Rev. James *‘It is how information is analysed and used, and then made available to the public, which determines its value.’*
- 11.1.3 The importance of outcome data in healthcare is evidenced by its many users:
- Patients
 - Clinicians
 - Providers
 - Commissioners
 - Regulators
 - Government departments
 - Researchers
 - National Institute for Clinical Excellence (NICE)
 - Get it Right First Time (GIRFT)
 - Industry
 - Investors
 - The media
- 11.1.4 The routine collection of outcome data is needed for:
- **Patient safety**, including for medical device or pathway innovation.
 - To evaluate treatment effectiveness
 - To detect unwarranted variation
 - To monitor trends over time
 - For service planning
 - To drive quality improvement
- 11.1.5 Quality improvement methodology is based on knowing the *‘status quo’* and the impact of a defined intervention.

- 11.1.6 Outcome measures can therefore be divided into those for **governance** (i.e. effectiveness, adverse events), **operational** (i.e. length of stay and cancellations) and **financial** (i.e. patient cost per stay and litigation). Outcomes may also be collected for **audit** (i.e. clinical registries) and **research** (i.e. clinical trials).
- 11.1.7 Three key care quality metrics:
- **Staff-to-patient ratios**
 - **Readmission rates (≤ 30 days)**
 - **Patient satisfaction**
- 11.1.8 In an unprecedented act of transparency, Lord Darzi’s 2024 report has been published with an accompanying technical annexe containing over 330 analyses commissioned for this independent investigation. ¹

11.2 Data sources: UK

- 11.2.1 When monitoring for patient safety we must also consider other factors that influence outcomes after surgery.
- Age
 - Gender
 - Frailty
 - Co-morbidities
 - Disease complexity
 - Socio-economic status
 - Social deprivation
 - Lifestyle (i.e. smoking and obesity)
 - Multidisciplinary care
- 11.2.2 We have an excellent **National Vascular Registry (NVR)** commissioned as part of the NCAPOP programme of national audits by HQIP, with risk adjustment proven to be effective, and an outlier policy of ‘alerts’ and ‘alarms’ when performance is outside of the norm. ^{2,3}
- The NVR’s new quarterly reporting tool reports timelines to intervention for AAA, CEA and CLTI.
 - The new HQIP outlier policy includes metrics on completeness of data entry on the NVR for providers in England, Wales and Scotland.

- Comparison of NVR data with that of other national registries has given us a safe minimum number of open AAA repairs of 13 per unit per annum. ⁴

11.2.3 In England, the **GIRFT: Getting it right first time** collects performance data and publishes this on the Model Health System. ⁵

11.2.4 GIRFT also commissions the **National Consultant Information Programme (NCIP)** that provides consultant level metrics on procedures with 23 dashboards of vascular activity including procedures on varicose vein and thoracic outlets along with data on aortic dissection, Table 11.1. ⁵

Table 11.1 NCIP vascular dashboards.

AAA repair without rupture age 17+ emergency
EVAR age 17+ elective
Open AAA repair age 17+ elective
Open thoracic aorta repair age 17+ elective
Ruptured AAA repair age 17+ emergency
TEVAR age 17+ elective
Thoracic aneurysm repair (with or without rupture) age 17+ emergency
Aortic dissection age 17+ emergency
Biopsy of artery age 17+
Insertion or creation of arteriovenous shunt age 17+ elective
Carotid endarterectomy/stenting age 17+
Percutaneous transluminal insertion/replacement of subcutaneous port age 17+
Thoracic outlet procedures age 17+ elective
Varicose vein procedures age 17+ elective
Femoral artery repair age 17+
Foot or toe amputation age 17+
Lower limb angioplasty/stenting age 17+
Lower limb bypass age 17+
Major lower limb amputation age 17+
Open embolectomy of femoral artery age 17+
Insertion/removal of ambulatory peritoneal dialysis catheter age 17+ elective
Insertion/removal of ambulatory peritoneal dialysis catheter age 17+ emergency
Percutaneous transluminal vein procedures age 17+
Percutaneous transluminal venous thrombolysis age 17+

11.2.5 GIRFT and NCIP use HES data, which is routinely collected, good for 'hard outcomes' such as length of stay, readmission and mortality. ⁶

11.2.6 NCIP is limited to English hospitals and consultants only for now. The data does not undergo the same validation and risk adjustment as data in the NVR.

11.2.7 HES data provides the ability to track longer term outcomes where it works in collaboration with NVR for AAA, carotid and lower limb revascularisation.

11.2.8 Capturing procedures in outpatients, the independent sector and consultant attribution or dual operating remains a work in progress.

11.2.9 The **Outcome Registries Programme (ORP)** aims to consolidate existing device registries to address device data collection and enhance patient safety by reporting adverse outcomes. ⁷

National Vascular Registry aortic data examples (Figures 11.1, 11.2 and 11.3)

11.3 Data sources: International

11.3.1 VASCUNET is a collaboration of clinical and administrative vascular registries in Europe and Australasia, administered and partly funded by the European Society of Vascular Surgery (ESVS). ⁸

11.3.2 VASCUNET regularly reports on the practice and outcomes of procedures from international registries. ⁹

11.3.3 **Society for Vascular Surgery's Vascular Quality Initiative (VQI)** is a multi-centre registry from the USA. ¹⁰

886 Publications	1008 Participating centres	1.28 million Procedures collected
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11.3.4 The International Consortium of Vascular Registries (ICVR) provides a collaborative platform through which registries and other stakeholders around the world can share data.

11.4 Concerns

11.4.1 What we do poorly is assess and report patient experience, both at our arterial centres and at network hospitals, as PROMS/PREMS are specifically excluded from our contractual audits.

Figure 11.1
Variation across NHS
organisations in the
time from assessment
to treatment (days)
for people who had
elective infra-renal
AAA repair between
January and
December 2023.

The black dot gives median delay, while the green line shows the interquartile range.

The red line shows the NAAASP target of 8 weeks (56 days).

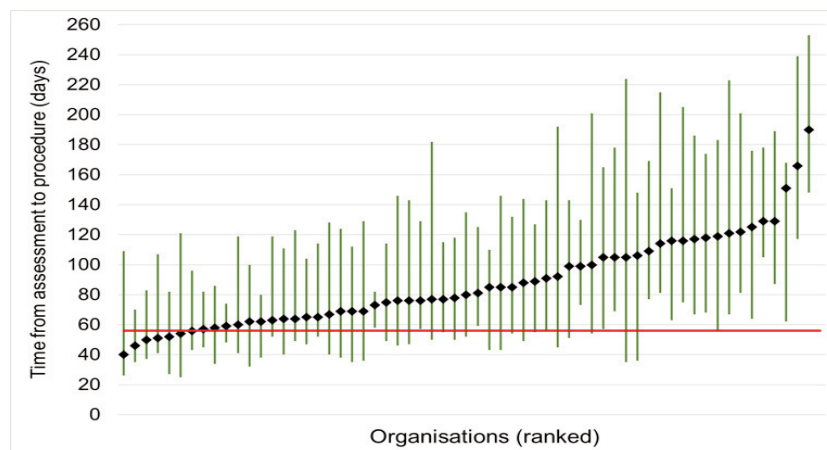


Figure 11.2
Risk-adjusted in-hospital
mortality rates after
elective infra-renal
AAA repair among
NHS vascular units
(Jan 2021 - Dec 2023).

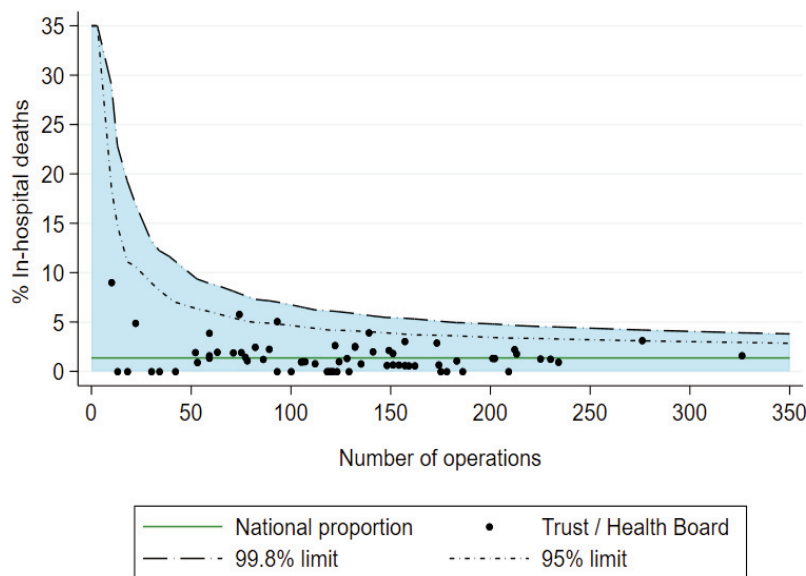


Figure 11.3
Annual number of
emergency repairs for
rAAA between 2014
and 2023 recorded in
the NVR by type of
repair.



- 11.4.2 We also lack accessible national metrics on public health provisions, such as provision of diabetic foot care services, supervised exercise programmes for intermittent claudication, shared decision making and patient education programmes.
- 11.4.3 We now collect such large healthcare datasets that it is possible to miss when performance is deteriorating or patient safety is compromised.
- 11.4.4 For some vascular conditions, small patient numbers are a risk as trends are more difficult to determine against the inevitable background variation of every patient and their disease being different.
- 11.4.5 We only collect procedural data in clinical registries. This means that we could be missing selection bias and changes in practice that are at the detriment to patients (e.g. turn down for emergency repair of ruptured AAA).
- 11.4.6 We also report short term outcomes, i.e. in-hospital mortality, without equally important mid- and longer-term outcomes, including complications, re-interventions and survival.
- 11.4.7 Our greatest risk is that monitoring of performance and acting on poor performance is considered a responsibility for someone else and patients suffer as a result.
- 11.4.8 We still lack the ability to link large datasets to benefit patient care and provide a holistic view.

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10. <https://www.vqi.org> (Accessed 30 Sept 2024)

12. RESEARCH DELIVERY

‘Research and innovation allow us to improve people’s quality of life, reduce the cost of treatments and advance in the prevention and cure of diseases.’

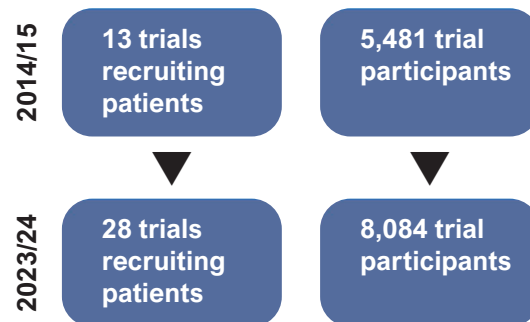
Innovation in the health sector 2023

12.1 Clinical research is essential.

- 12.1.1 The NHS Constitution includes a commitment to innovation and to the promotion, conduct and use of research to improve the current and future health and care of the population.
- 12.1.2 At a time when healthcare funding is becoming increasingly limited, without robust evidence to support practice, there is a risk of service reduction or withdrawal (decommissioning).
- 12.1.3 Clinical trials have directly informed clinical guidelines in aortic, carotid, venous, peripheral arterial disease and vascular access, but further research is needed in other areas.
- 12.1.4 Research has also evaluated technology and is a pre-requisite for the commissioning of interventions using medical devices.

12.3.3 The key common aspect of these recently funded trials is that they are effectiveness trials, so will provide direct evidence to inform clinical commissioning.

12.3.4 The number of research studies and number of people participating in vascular research have both increased:



12.3.5 Despite this success to date, a failure to deliver recruitment to the newly funded trials would result in:

- Reputational harm, threatening future vascular research funding success.
- Stagnation in the evidence base for vascular services.

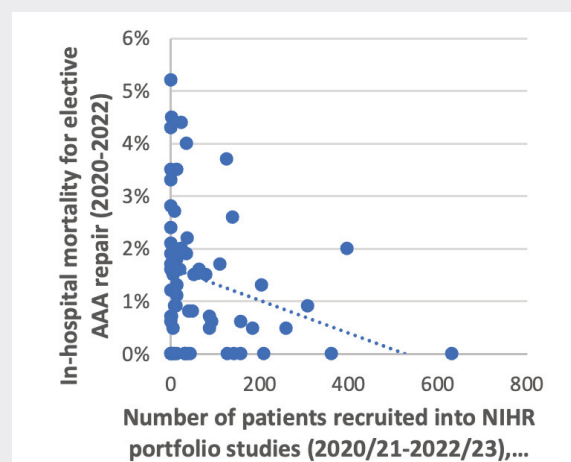
12.2 Patients benefit

- 12.2.1 Higher levels of research activity are associated with better overall mortality and improved CQC ratings.¹⁻⁵
- 12.2.2 Patients in trials have more confidence in staff and are better informed about their condition and treatment.⁶
- 12.2.3 Patients in trials may have access to interventions only available in clinical studies (e.g. deep venous arterialisation).
- 12.2.4 Unit research volume correlates with better outcomes for AAA repair⁷, lower limb bypass and carotid endarterectomy. This correlation is shown for AAA repair in Figure 12.1.

12.3 Research strategy for success.

- 12.3.1 In 2018, the allied UK Vascular Societies partnered with the James Lind Alliance to undertake a vascular research priority setting exercise.
- 12.3.2 The multi-disciplinary special interest groups (SIGs) developed as part of this work have since attracted over £10m in new research funding for vascular diseases over the last two years, from funding bodies including the NIHR and British Heart Foundation (BHF).

Figure 12.1 Research volume is associated with better clinical outcomes:



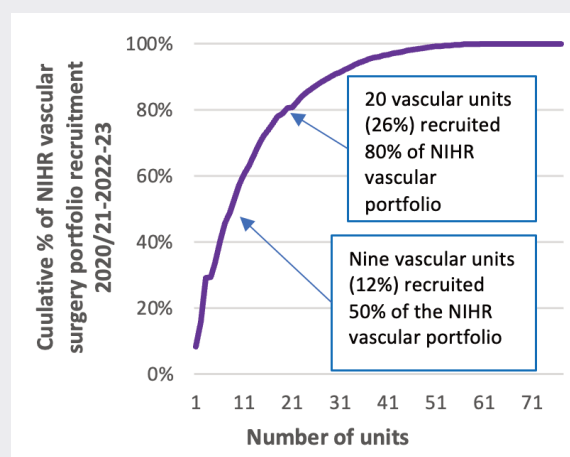
12.4 Research delivery

12.4.1 In the three years 2020–22 over half of the NIHR portfolio activity for vascular surgery

was delivered by nine (12%) UK vascular units, Figure 12.2.

- 80% of recruitment was delivered by 20 sites (26% of the vascular units).
- 30 Trusts (39%) recruited <4 people per year into NIHR vascular surgery research studies over the three years.

Figure 12.2 Major variation in research delivery volume across vascular units.



- 12.4.2 These data show that most vascular patients in the UK are denied access to clinical trials and that vascular trainees are denied experience in delivering clinical trials.

12.5 Enablers and barriers

- 12.5.1 Analysis of NIHR recruitment data demonstrates wide variation in research delivery (NIHR portfolio adopted studies, UK only).

- 12.5.2 The delivery of clinical research within vascular units is dependent upon Trust support and adequate resources:

- Research governance framework
- Knowledge, training and experience
- Staff time to recruit participants
- Facilities

- 12.5.3 To explore the barriers and enablers to research delivery in vascular units a survey was distributed via the VS membership, findings in Figure 12.3.

- 12.5.4 This survey is limited by an incomplete response rate, and further work to understand the enablers and barriers to research in all vascular units is required.

- 12.5.5 Approximately half of the vascular units sent the survey did not respond. This might

indicate a general lack of interest in research in these units.

- 12.5.6 Access to research support staff ranged from ad-hoc shared staff to dedicated vascular research teams.

Figure 12.3 Research delivery survey of VS members 2024 (courtesy of Prof Bown).

Research delivery survey (2024)

- 55 responses from 38 units were received. This included high, medium and low recruiting centres.
- 28 units had at least one NIHR portfolio trial open to recruitment.
- The units responding collectively employed 333 WTE NHS and 24.5 WTE university consultants.
- Most units reported being keen to undertake research but lacked the time to be able to do so.
- Of the 333 NHS consultants there were a total of 19 PAs for research in their job plans.
- 12 units reported no access to research support staff.
- Barriers encountered to participation in research delivery.

Barriers to research participation

- other reason
- lack of interest
- lack of facilities
- too busy with clinical work
- no time allocated in job plans

12.6 Research rarely supported in NHS job plans.

- 12.6.1 Vascular consultants want units to deliver more research, Figure 12.4.

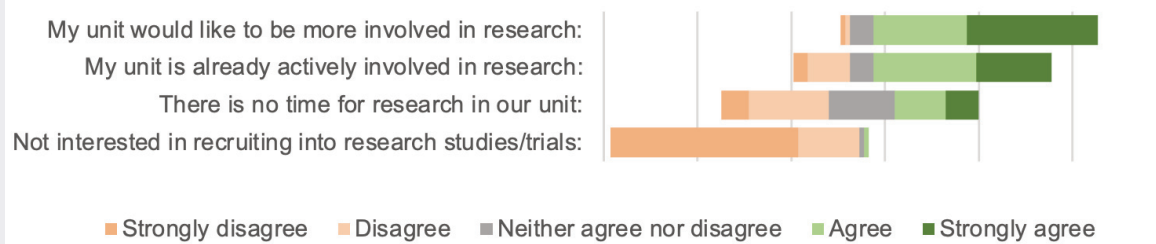
- 12.6.2 However, 2024 survey respondents in NHS posts averaged out at 12 minutes per week per consultant for research.

- 12.6.3 The Research Committee reviewed NHS consultant vascular surgeon job descriptions submitted for approval by RCS England from 2020 to 2023:

Over 80% (47/58) of organisations stated that research was expected.

- Five organisations stated that research was 'actively encouraged'.
- One job plan included an unremunerated research session.

Figure 12.4 Variation in research delivery due to inadequate time for research, not a lack of interest.



- Five organisations stated that research was part of the 1.5 SPAs.
- Two organisations provided dedicated time (PAs) for research.

- 12.6.4 For comparison, for clinical vascular scientists the CSVS recommends that every Clinical Vascular Scientist should have time dedicated to research.
- 12.6.5 The CSVS encourages scientists to access dedicated funding streams with the NIHR, BHF and others to increase their clinical academic time.
- 12.6.6 Providing time for research in their future consultant posts is essential.

12.7 Clinical academic workforce

- 12.7.1 Clinical academic vascular specialists (medical and non-medical) are a diverse group, ranging from those with substantive university contracts undertaking minimal clinical activity to research active NHS staff with only a small amount of dedicated academic time in their job plans.
- 12.7.2 Quantifying this workforce is challenging due to this diversity but can be approximated from the number of self-

identified clinical academics on approximately 50:50 clinical: academic contracts.

- 12.7.3 The 2024 VS research survey identified that there are:

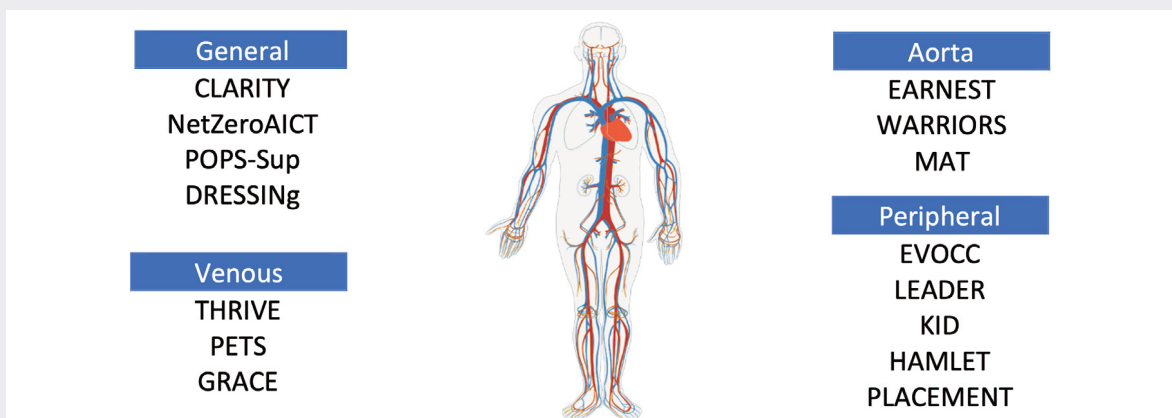
- 30 (8.5%) clinical academic vascular surgeons out of a total of 552 consultants.
- 7 (3.4%) NIHR funded clinical lecturers out of 206 higher surgery trainees.
- 29 (14%) trainees currently out of programme to undertake a period of research.
- 8 (3.9%) academic clinical fellows (ACFs) undertaking pre-doctoral academic training.

- 12.7.4 This represents a healthy pipeline of trainees undertaking academic training.

12.8 NIHR Associate Principal Investigator

- 12.8.1 The NIHR Associate Principal Investigator (API) scheme launched in 2020.
- 12.8.2 Historically, 11 vascular studies have been registered for the scheme and 56 trainees have taken part.

Figure 12.5 The number of vascular trials currently open for recruitment means that almost every vascular patient can be offered a trial in which to participate.



- 12.8.3 In 2024, 11 vascular trainees were active as APIs in 5 vascular NIHR studies.
- 12.8.4 Increasing the number of studies registered for the API scheme and broadening the number of sites where these studies are open will allow more trainees to access this scheme.

12.9 Summary

- 12.9.1 Vascular surgery has 28 clinical effectiveness trials currently open (2023/4) for recruitment, Figure 12.5.
- 12.9.2 Clinical vascular research must be a priority to improve patient care.
- 12.9.3 Consultants need time in their job plans for research delivery and training.
- 12.9.4 The curriculum requirements for research in vascular surgery are based on traditional academic metrics, such as publications and presentations, and this needs to change.
- 12.9.5 Improved research delivery will require investment; however, in the future it makes what we do for our patients safer, more effective and sustainable.

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13. INNOVATION

‘Creativity is thinking up new things. Innovation is doing new things.’

Theodore Levitt

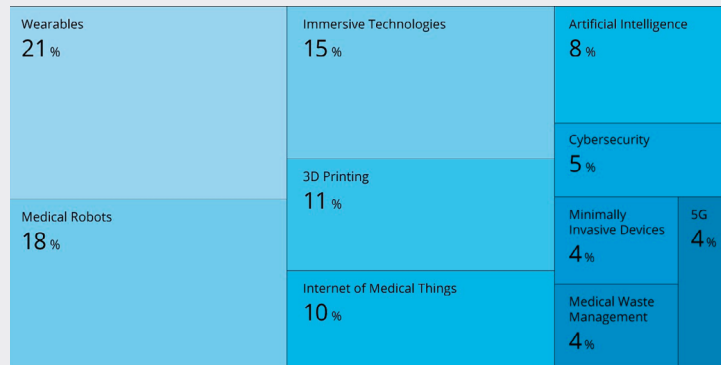
13.1 Why innovate?

- 13.1.1 Innovation can identify less invasive, more comfortable, treatment options, which can improve the patient experience and reduce the stress associated with vascular treatment. ¹
- 13.1.2 Innovation in vascular surgery can take many forms, from minor modifications in existing practice to major research or technological advancement, Figure 13.1.
- 13.1.3 The application of minimally invasive, often percutaneous, radiological guided techniques using ionising radiation and/or ultrasound have revolutionised vascular surgery.
- 13.1.4 Major innovations can be exciting but also risk. Implementation of new techniques should follow the framework set out by RCS England. ²
- 13.1.5 Advances in medical technologies help enable more personalised patient-centred care, which can lead to better care and results.
- 13.1.6 The internet and device interconnectivity allowed care to be delivered remotely and new ‘virtual’ teams to develop (eHealth).

13.2 Biomedical engineering and medical devices

- 13.2.1 Biomedical engineering (BME) is the application of engineering principles and design concepts to medicine and biology for healthcare applications.

Figure 13.1 Impact of 10 medical device trends.
© StartUp insights



Regenerative medicine

- 13.2.2 In the future we may be able to repair or replace damaged blood vessels with the patient’s own cells.

Robotics

- 13.2.3 There is substantial investment worldwide into robots for surgery. CMR Surgical, developer of the **Versius robot**, raised over \$600m of investment in 2021.
- 13.2.4 Robotic surgery has not been adopted into vascular practice to the same extent as within other specialties, largely because of the rapid development and application of endovascular techniques.
- 13.2.5 The number of vascular surgeons trained on robotic devices remains limited; early results are encouraging. ³
- 13.2.6 Development of robotic vascular surgery is anticipated in the next decade coupled to funding and development of robotic fellowships.

Endovascular procedures

- 13.2.7 Recent advances have focused on clot retrieval, vessel preparation (intravascular lithotripsy) and new devices for the repair of aortic aneurysms, and dissection, Figure 13.2.

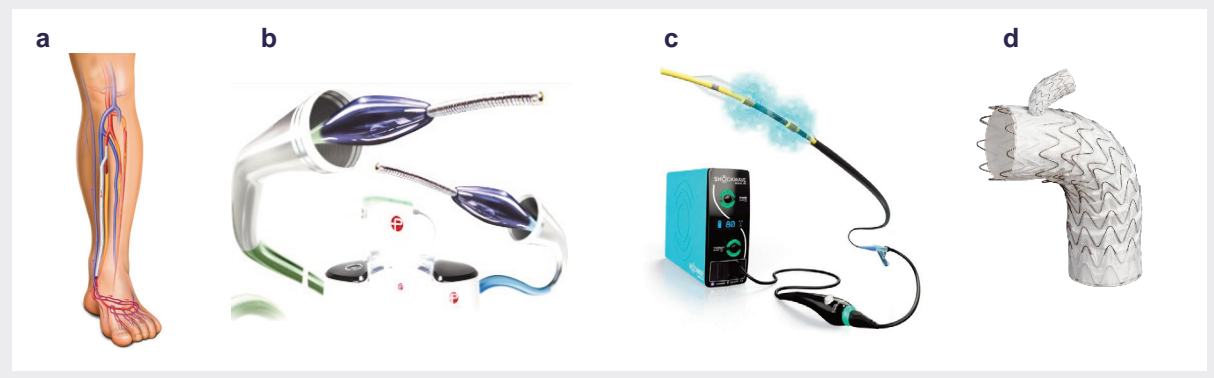
Software

- 13.2.8 Philips’ LumiGuide 3D medical device guidance solution won the prestigious ‘Best of the Best’ Red dot design award 2024, Figure 13.3a.

Wearable technology

- 13.2.9 Wearable technology refers to compact electronic devices that can be incorporated into clothing or accessories. ⁴
- 13.2.10 These devices connect to the ‘internet of things’, a network of real-world objects that can communicate data

Figure 13.2 (a) LimFlow™, limb salvage in CLTI; (b) Penumbra Indigo™ lightning device, mechanical thrombectomy, arterial and venous; (c) Shockwave Peripheral IVL, intravascular lithotripsy; (d) Gore TBE™, branch endograft.



and sense the status of each object and the surrounding environment.⁵

Wearables for vascular patients

- **Podimetrics** has designed a smart pad people with advanced diabetes can stand on daily.
- **Duke University** (USA) used wrist-worn commercially available fitness trackers to monitor daily activity and set exercise prescriptions.⁶

Smartphone applications.

- 13.2.11 Stamford University (USA) has developed **VASCTRAC**, an Apple app that enables remote collection of medical and physical activity data for research into peripheral arterial disease.
- 13.2.12 Israeli software company **Healthy.io** aims to turn a smartphone camera into an FDA-approved test-at-home kit for UTIs and open wounds.
- 13.2.13 **Aidoc aiOS™** allows integration with other systems and tools, Figure 13.3b.

13.3 Pharmaceutical treatment

- 13.3.1 There have been recent innovations in the management of hypercholesterolaemia, including PSK9 inhibitors and colchicine.
- 13.3.2 Everolimus and sirolimus are likely to join paclitaxel as an option to reduce myointimal hyperplasia following peripheral endovascular interventions.
- 13.3.3 Recent trials (i.e. COMPASS) have shown greater efficacy at preventing acute cardiovascular events when anti-coagulant and anti-thrombotic agents are combined.

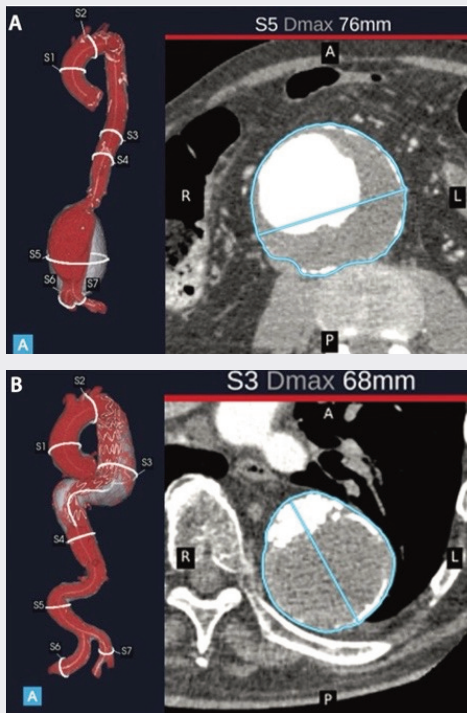
13.4 Imaging and diagnostics

- 13.4.1 Non-invasive imaging is now being integrated with artificial intelligence (AI) technology to provide improved diagnostic capabilities in both coronary and peripheral artery disease.
- 13.4.2 Techniques like 3D imaging and fusion imaging, which combines data, are providing unprecedented views of the vascular system, Figure 13.4.

Figure 13.3 (a) Philips Fiber Optic Real Shape (FORS) technology and (b) Aortic aneurysm care coordination using a smartphone app (aidoc.com).



Figure 13.4. ARVA, artificial intelligence vessel segmentation with volume rendering for surveillance of aortic disease.



- 13.4.3 Prof Regent Lee's group's work developing **CT Digital Contrast** has received €6M Horizon Europe funding. This work is aimed at making scanning safer, faster and more sustainable.

13.5 Precision medicine

- 13.5.1 Precision medicine is a treatment approach that uses genetic and molecular data to personalise treatment and reduce the side effects of treatments.
- 13.5.2 Examples of application for people with vascular disease:

- Genomics in aortic disease
- Clopidogrel resistance testing

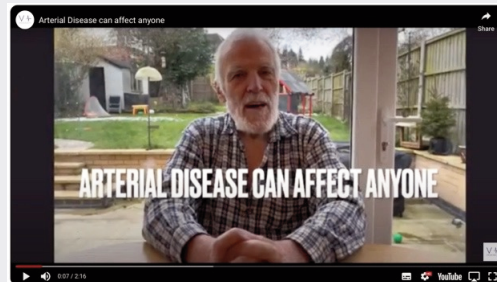
13.6 eHealth

- 13.6.1 eHealth is defined as "the use of new information and communication technologies (ICT) to improve or support health and health care".
- 13.6.2 eHealth has grown in popularity over recent years as a cost-efficient, rapidly adaptable tool to deliver health care education to a wide audience.

Patient resources

- 13.6.3 The current UK Short Stay Aneurysm Repair (STAR) study uses a preoperative

Figure 13.5 Video: Arterial disease can affect anyone. © Charing Cross International Vascular Symposium / Vaux Robertson.



tele-coaching video to provide information to patients undergoing short stay (23-hour) endovascular aneurysm repair (EVAR).

- 13.6.4 Charing Cross Vascular Symposium has supported the development of patient awareness resources, Figure 13.5.

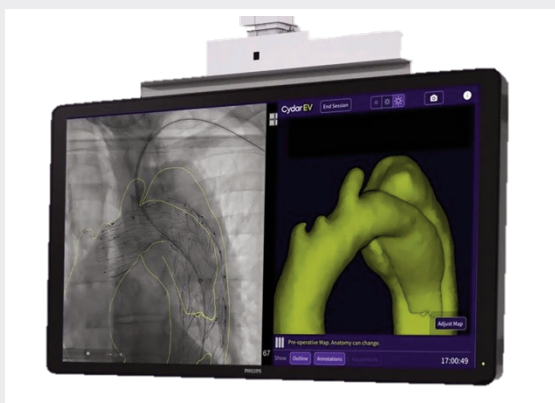
Telemedicine

- 13.6.5 Telemedicine allows patients to consult with their doctors via video conferencing, which is especially useful for patients who live in rural areas or who are unable to travel for medical care.
- 13.6.6 Teleconsultation can be used for interactions between specialists across institutions.⁷

13.7 Artificial intelligence, machine learning and 'big data'

- 13.7.1 The NHS Long Term Plan pushes for a digital transformation where digitally enabled care will become mainstream.
- 13.7.2 Artificial intelligence (AI) and machine learning are technologies that can make diagnoses, create personalised treatment plans (i.e. creation of an individualised surveillance program) and discover new treatments for diseases.
- 13.7.3 There are also short-term opportunities of generative AI to reduce the administrative burden on staff, enhance operational efficiencies and improve productivity.
- 13.7.4 Predictive analytics can help healthcare providers improve efficiencies and act pre-emptively:
- Risk of progression of disease
 - Peri-operative risks
 - Benefit from surgery
 - Address health inequalities

Figure 13.6 CYDAR Medical real time surgical guidance for endovascular procedures.



- 13.7.5 Perioperative intelligence uses these technologies to provide appropriate and safe perioperative care, Figure 13.6.
- 13.7.6 Machine learning algorithms have been applied to predict AAA growth, detect endoleaks and identify patients with PAD who have high mortality risk.⁸

13.8 Immersive technologies

- 13.8.1 Looking forward, innovations such as augmented reality (AR) could revolutionise surgical planning and execution by overlaying information directly onto the surgeon's views:
- Medtronic has agreed a strategic collaboration with NVIDIA to develop AI healthcare products.
 - Spanish start-up **ViRe Instruments** offers a VR headset that allows doctors to easily load and view DICOM files (CT images) in 3D.
- 13.8.2 Virtual and augmented reality are other medical technologies that are transforming the way doctors are trained.
- 13.8.3 Virtual reality allows surgeons to practice procedures in a virtual environment before performing them on a patient.⁹

13.9 Sustainability

- 13.9.1 No less than 30% of global data is generated by healthcare and, at 36%, the projected growth of healthcare data over the period 2018–2025 is faster than any other data type.
- 13.9.2 It is important that IT suppliers report their environmental impact and have a plan in place to reduce greenhouse gas emissions.

- 13.9.3 Suppliers need to demonstrate how their innovation supports CO₂ reduction by optimising resources and workflow efficiency.

13.10 Risks

- 13.10.1 Innovation can also come with risks, with harm caused to patients when devices do not perform as anticipated.

Device failure

- 13.10.2 Withdrawal of Endologix Nellix™ device from the UK and voluntary withdrawal worldwide of Navion™ thoracic aortic stent graft (Medtronic) are examples of medical devices that have not performed as expected, despite clinical trials and regulatory approval.
- 13.10.3 New medical devices should be subject to enhanced scrutiny through clinical registries (see Section 11).

Cyber security

- 13.10.4 Cloud-based and connected medical devices make health data and healthcare organisations vulnerable to cyberattacks.
- 13.10.5 This year, Synnovis, a laboratory which processes blood tests on behalf of the NHS, was the victim of a cyberattack.

Digital literacy

- 13.10.6 The 'digital divide' is the difference between those who possess technological skills and those who do not.
- Digital health technologies tend to be used less by people from ethnic minority groups or those who have language barriers.
 - There are also economic considerations, such as access to fast internet, that can widen health inequalities.¹⁰
- 13.10.7 Work is needed to determine digital literacy in vascular patients. This could be achieved through validated literacy questionnaires such as eHEALS for eHealth literacy or MDPQ-16 for mobile device proficiency.¹¹

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14. CONCLUSIONS

‘Achieving transformational change in healthcare systems is complex and challenging. It is also always frustratingly slow.’

- 14.1 It is 12 years since vascular surgery was recognised as a separate surgical speciality in the UK.
- 14.2 Since then, two periods of austerity and Covid-19 have had a negative impact on UK population health and inequalities.
- 14.3 Sir Julian Hartley, chief executive of NHS Providers, has summed up changes needed within health services:

“With the government’s 10-year plan for the NHS on the horizon, it’s right that we shift our focus now to creating a truly ‘next generation’ health service. Focusing on the creation of a ‘digital’ NHS, prevention and public health and ensuring patients are cared for in the right setting are steps in the right direction. These must go hand in hand with sustainable funding and investment, an end to chronic workforce shortages and more support to meet growing demand.”

- 14.4 The Covid-19 pandemic showed us that rapid change is achievable. What is needed is an integrated approach, whereby different factors work together to achieve their part backed by investment:

A clear vision

- Effective and motivated leaders
- Our patients as partners
- Engaged staff
- Managers to implement the vision in the context of local circumstances
- Data to monitor what we do

- 14.5 A key benefit of making these changes would be the ability to deliver time critical treatment for people with CLTI, TIA/stroke and AAA and better meet ever increasing patient demand.
- 14.6 Increased productivity and delivering better care would also be positive for the wellbeing of our vascular multi-professional teams and for training.

Public health

- 14.7 NHS AAA screening programmes have reduced deaths from ruptured AAA.
- 14.8. We urgently need a public health initiative to tackle the rise we are seeing in **lower limb amputations**.
- 14.9 Tackling **health inequalities** is needed to help most disadvantaged people in society who are the most vulnerable to loss of a limb or shortened life expectancy.
- 14.10 **Tackling obesity**, with links to diabetes and hypertension, and relationship to physical activity and diet are key for the health of the nation and controlling future demand

Vascular services

- 14.11 Pathways of care need to be patient centred, address healthcare inequalities and provide equitable access for patients irrespective of where they live or how they first present.
- 14.12 Supra-regional pathways will emerge due to the development of specialist teams, as we have seen in the regional delivery of acute aortic dissection care.
- 14.13 Sustainability of the treatments we deliver will become an increasingly important measure of our success.

15. SIX STEPS TO IMPROVEMENT

1. **‘Whole system approach’ to vascular disease based around prevention, structured referral pathways and evidence-based management.**

AREAS FOR IMPROVEMENT	INVESTMENT	SUSTAINABILITY
Tackling obesity, focusing on diet and exercise	Public health	High
Supervised exercise programmes (SEP)	ICSs	High
Foot and ulcer care for people with diabetes	ICSs	High
Superficial and deep venous disease	ICSs	High

2. **Engage patients in self-care when making decisions and reporting outcomes. Listen to their feedback and be open when things go wrong.**

AREAS FOR IMPROVEMENT	INVESTMENT	SUSTAINABILITY
Shared decision making	Providers	High
Openness and transparency	Providers	High
Routine collection of patient feedback data	Providers	High

3. **Embed clinical research into both training and service delivery to provide better and safer care for people with vascular disease in the future.**

AREAS FOR IMPROVEMENT	INVESTMENT	SUSTAINABILITY
Investment in research capacity	Providers	High
All consultants given access to research time	NHS	High
Embed clinical research into the vascular curriculum	NHS	High

4. **Innovation, digital transformation and sustainability.**

AREAS FOR IMPROVEMENT	INVESTMENT	SUSTAINABILITY
Linked EHRs and PACS systems across ICS footprints.	Providers	Medium
Integration of vascular pathways into GP digital systems	ICS	High
‘Virtual wards’ and ‘Telemedicine’	NHS	High

5. **Improve the working lives of staff. Recruit, train and retain to allow them to provide the best care to their patients.**

AREAS FOR IMPROVEMENT	INVESTMENT	SUSTAINABILITY
Invest in leadership training and network managers	Providers	High
‘Zero tolerance’ for unprofessional behaviour	Providers	High
Strategies for the recruitment and retention of staff	Providers	High

6. **Better productivity. Investment in services and changing how we work.**

AREAS FOR IMPROVEMENT	INVESTMENT	SUSTAINABILITY
Build effectiveness and resilience in our services	NHS	Medium
Surgeons spend more time on patient facing care	Providers	Low
Delegation of routine tasks to non-clinical staff	Providers	Medium

Sustainability comes from prevention, avoiding procedures of limited benefit, identifying and reducing unwarranted variation, reusing and recycling, reducing travel by patients and staff and removing CO₂ from medical device production and supply chains.

16. DEFINING SUCCESS

The 'acid test' of how we have done will be how our vascular services look in 5 years' time.

- Have we got better at listening to our patients?
- Is care delivered consistently, in a timely manner, and is it safe?
- Are we delivering better on research and innovation?
- How are the wellbeing of our workforce and the cultures within our teams?

In summary, we need improvement in each of the following five key areas:

Figure 16.1 Steps to improve population health, address inequalities and improve patient outcomes.

Social determinants of cardiovascular health, including social inequality.



Consistent approach to cardiovascular risk factor reduction.



Structured referral pathways
Access to earlier diagnosis, imaging, and treatment with self-care.



Evidence based management.
Clinical trial enrolment.
To reduce variation and improve timeliness, patient safety and effectiveness.



Prehabilitation and rehabilitation.*
To improve outcomes from surgery, recovery and patient experience.

* Needs-based prescribing of exercise, nutrition and psychological interventions.

The Vascular Societies of Great Britain and Ireland

British Association of Chartered Physiotherapists in limb Abscence Rehabilitation

British Society of Interventional Radiology

The Society for Vascular Nurses

The College and Society for Clinical Vascular Science

Vascular Society of Great Britain and Ireland

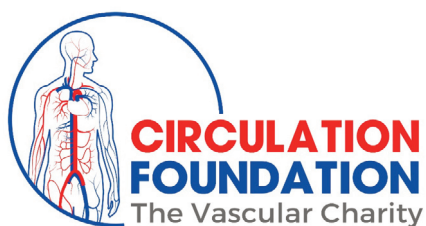
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