



Vascular Surgery Workforce and Wellbeing Survey 2021



The Vascular Society for the United Kingdom and Ireland

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FOREWORD

Here we present the findings of the Vascular Surgery Workforce Survey 2021 on behalf of the Vascular Society for the United Kingdom and Ireland and Specialty Advisory Committee for Vascular Surgery. This document builds upon our previously published Vascular Surgery Workforce Survey 2013 and 2018 and describes the characteristics of our workforce and our wellbeing in 2021.

The Global COVID-19 Pandemic has been the greatest health and societal emergency of our generation, with devastating loss of life and livelihood. All surgical services have been impacted and our focus is now to mitigate secondary harm caused by delays to diagnosis and treatment of vascular conditions.

Vascular Surgery as a specialty represents one of the smaller physician specialty workforces, yet they treat a disease that is part of the number one killer in the UK and affects the fastest growing segment of the nation's population, atherosclerosis in the elderly. Vascular Services have evolved to incorporate the management of a vast array of conditions affecting the body's vascular system to include the arteries, veins, and lymphatics. The new generation of vascular surgeons must have a range of knowledge and technical skills consummate with the scope of modern vascular surgical practice to encompass vascular medicine, open surgery, and endovascular therapy.

Like the complex network of blood vessels throughout the body, so too there are many complex interactions between vascular surgeons, due to their specialist knowledge of blood vessels, and other specialists managing some of the most common and morbid conditions that affect our population such as stroke, heart disease, diabetes, trauma, and cancer. Vascular Disease such as atherosclerosis (blocked arteries), athero-embolism (stroke and limb ischaemia), venous thrombosis (clots), venous disease (varicose veins and ulcers), diabetic foot disease and aneurysm are amongst the commonest causes of disability, limb-loss (amputation) and death in our increasingly elderly population. Vascular surgeons have a large urgent and emergency workload, also providing support for vascular trauma and bleeding catastrophes, making the vascular service integral to any acute clinical network.

Workforce planning is the process by which we ensure that an organisation has the right number of employees with the right knowledge skills and behaviours in the right place, at the right time. Workforce plans are the foundation that resource management activities such as recruitment, selection, orientation, training, and retention are built on. There are many factors which may impact of the shape of our vascular surgery service in the future and the workforce needed to provide it, and these include: reconfiguration of services; advances in healthcare practice; financial and political decisions. The Vascular Society of Great Britain and Ireland will again make recommendation on standards for a vascular surgery service in their document "The Provision of Vascular Services 2021 (Updates on 2018, 2015 and 2012)". Of course any planning must recognise the uncertainty of the future but using good intelligence robust estimates can be made.

Thus, as we anticipate the changing population demographics and treatable disease patterns over the next 40 years, it would appear inevitable that our specialty will be in short supply at a time when demand for our services is growing rapidly.

Yours sincerely,

Professor Denis W Harkin MD FRCS FEBVS

Consultant Vascular Surgeon and Chair of Medical Professionalism RCSI.

On behalf of Vascular Society of Great Britain & Ireland

On behalf of the Specialty Advisory Committee for Vascular Surgery

EXECUTIVE SUMMARY

Vascular Surgery in the United Kingdom was established as a new surgical specialty in 2012. The Vascular Society of Great Britain and Ireland produced the first rigorous analysis of the specialty of Vascular Surgery in the UK with the publication of its United Kingdom Vascular Surgery Workforce Survey in 2013, updated in 2018, and now provides an updated assessment of the state of Vascular Surgery in respect to Workforce and Wellbeing in 2021 (some 9 years on).

In developed countries Worldwide, the number and complexity of vascular surgery procedures is increasing year-on-year. Worldwide there is considered to be a shortage of vascular surgeons to meet the increasing demand and this shortfall is significant in the United Kingdom and Ireland.

Our Vascular Surgery Workforce Report 2021 considers the best available published data on Workforce Numbers, Vascular Activity and self-reported data from The Vascular Surgery Workforce and Wellbeing Survey 2021, representing the views of Vascular Surgeons practicing in over 70 Acute Hospital Trusts across all regions of the United Kingdom and Ireland.

We report our key findings, including a detailed analysis of the state of Vascular Surgery in 2021, and make recommendations to address our major challenges.

We present this report on behalf of the Membership and Vascular Society of Great Britain and Ireland.

KEY FINDINGS

It is undoubtedly clear that we need to plan for a significant expansion in the Consultant Vascular Surgeon Workforce over the coming years.

- To sustain and expand our Vascular Surgery Workforce it is essential we ensure training of sufficient numbers of new vascular surgeons.
- Vascular surgeons self-reported hours worked and contracted hours exceed that which has been recommended for a health work-life balance .
- Gender Diversity, is increasing, especially amongst new consultants and trainees.
- The Race/Ethnicity Diversity in Vascular Surgery is greater than general population.
- The loss of experienced vascular surgeons, is of grave concern, especially when drivers are to retire from clinical practice or to avoid pension taxation.
- The Copenhagen Burnout Inventory suggests the risk of Burnout is high in Vascular Surgeons.
- The Brief Resilience Scale suggests Vascular Surgeons are a Resilient Group.
- Workplace harassment, bullying and abuse is unacceptable and addressing it, and the factors underlying it, must be a major focus for the Health Service.
- We also need to make work-life balance and the health-and-well-being of our members a priority.

1. WORKFORCE ESTIMATION AND PREDICTIONS

1.1. INTRODUCTION

Vascular Surgery

Vascular Surgery treats vascular disease to include the arteries, veins and lymphatics. Vascular Disease such as atherosclerosis (blocked arteries), athero-embolism (stroke and limb ischaemia), aneurysms (to prevent rupture), venous thrombosis (clots), venous disease (varicose veins and ulcers) and diabetic foot disease are amongst the commonest causes of disability, limb-loss (amputation) and death in our increasingly elderly population. Vascular surgeons have a significant unscheduled (emergency) workload, managing sepsis, ischaemia, bleeding catastrophes and vascular trauma, making the vascular surgery service integral to any acute hospital or clinical network. Modern Vascular surgeons lead multidisciplinary teams who manage the broad scope of modern vascular surgical practice to encompass vascular medicine, open surgery, and endovascular therapy. In the United Kingdom vascular surgery became a separate specialty in 2012 and as we reconfigure acute and emergency services we must ensure that commissioners and workforce planners recognise the integral role of vascular surgeons in the delivery of those acute services.

1.2. WORKFORCE ESTIMATION

Estimating the Vascular Surgeon Workforce in the United Kingdom

To arrive at an estimate of the current Vascular Surgeon Workforce in the UK and allow prediction of future workforce requirements we scrutinized data derived from the Vascular Surgery United Kingdom Workforce Survey (VSUKWS) 2021, National Health Service (NHS) Employers Electronic Staff Records (ESR), National Vascular Registry (NVR) surgeon level public report, and Hospital Episode Statistics (HES) for NHS England. The National Health Service (NHS) collates data on consultant workforce primarily from Electronic Staff Records (ESR). Unfortunately, as a relatively new specialty there is no historical data for Vascular Surgery, as previously a sub-specialty of General Surgery (pre-2013), and even today most specialist Vascular Surgeons are coded as General Surgeons on these records. Therefore, we felt ESR data was currently unreliable and could not be used for further analysis. Without reliable data from employers we looked to other sources of information. The National Vascular Registry (NVR), records and reports on outcome activity data for vascular surgeons practicing in the UK (a legal requirement in England). The National Vascular Registry (NVR) "2020 Report on Surgical Outcomes Consultant-level Statistics" records that 518 surgeons in UK were conducting Abdominal Aortic Aneurysm (AAA) repair. With a UK population circa 67 million, this suggests that currently the ratio of vascular surgeons to capita population is 1 per 129,000. The VSGBI recommends a minimum of 1 vascular surgeon per 150,000, and for large tertiary centres, due to added complexity of case load, 1 per 100,000 population. Many consider AAA repair to be an index procedure for a specialist vascular surgeon, and an essential skill for a Vascular Generalist equipped to manage unselected Vascular Surgery Emergencies. Using this definition we felt the NVR data provided the most robust current estimate of vascular surgeons currently practicing in the UK, and these numbers are used in future predictions.

We need sufficient Consultant Vascular Surgeons, who as Generalist Vascular Surgeons are able to manage an unselected emergency Vascular Surgery workload (including Ruptured AAA Care), to provide safe and sustainable 24/7 emergency cover for vascular surgery services in the UK.

The Vascular Surgeon Workforce in the United Kingdom 2021

We considered the ratio of consultant vascular surgeons, per capita population, across the UK. The Office for National Statistics gives the population for the Nations of the UK as of Office National Statistics (ONS) Population mid-year estimate 2019: United Kingdom (66,796,800); England (56,287,000); Scotland (5,463,300); Wales (3,152,900); Northern Ireland (1,893,700). To determine whether there are sufficient numbers of Consultant Vascular Surgeons to deliver a safe level of Vascular Surgery Service across the respective UK Nations, we carried out weighted-capitation transformation based on assumed ideal numbers of consultant vascular surgeons' per capita population, as follows: Weighted capitation estimate as number registered by NVR (surgeons conducting AAA repair); 1 per 100,000 as VSGBI (recommended minimum number per population), **Table 1.**

Table 1. United Kingdom Vascular Surgeon Workforce (Consultant) 2021.

Region	Consultants (2021)	Population (2021)	Consultants (2021) per capita population (1,000s)
England	447	56,287,000	1 per 125,921 population
Scotland	36	5,463,300	1 per 151,758 population
Wales	27	3,152,900	1 per 116,774 population
Northern Ireland	8	1,893,700	1 per 236,712 population
United Kingdom	518	66,796,800	1 per 128,951 population

Source: National Vascular Registry (2021, 2018, 2013) Vascular Surgeons who perform Abdominal Aortic Aneurysm (AAA) and Provision of Vascular Services (2018) which recommends Vascular Surgeon 1 per 100,000 capita of population. Office National Statistics (ONS) Population mid-year estimate 2019 (Release date: 24 June 2020): United Kingdom (66,796,800); England (56,287,000); Scotland (5,463,300); Wales (3,152,900); Northern Ireland (1,893,700).

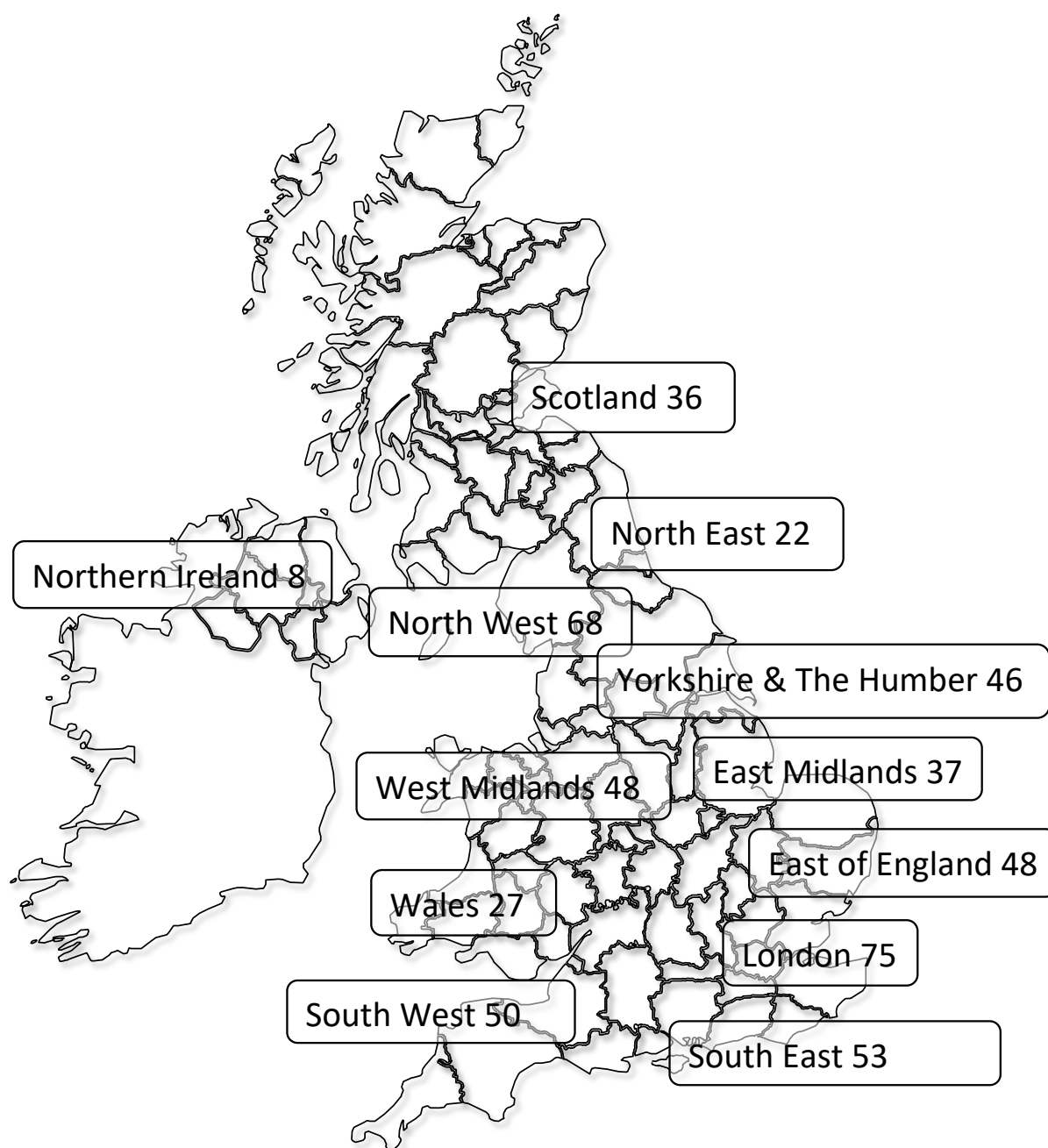
<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates>.

We found that the number of Consultant Vascular Surgeons in the devolved Nations and United Kingdom as a whole were as follows: England (n=447) 1 per 125,921 population; Scotland (n=36) 1 per 151,758 population; Wales (n=27) 1 per 116,774 population; Northern Ireland (n=8) 1 per 236,712 population; United Kingdom (n=518) 1 per 128,951 population. The United Kingdom nations varied widely in respect to their provision of vascular surgeons per capita population, with Northern Ireland having the least provision, nearly one-half of the provision available to England, Scotland and Wales. In a region such as Northern Ireland with one of the fastest growing populations this shortfall needs urgently addressed.

Northern Ireland having the least provision with only 1 per 236,712 population, a level of provision nearly one-half of the provision available to England, Scotland and Wales

We also looked at the UK Vascular Surgeon Workforce by health administrative region (England) and this is displayed graphically in **Figure 1.**

Figure 1. UK Vascular Surgeon Workforce by health administrative region.



Source: National Vascular Registry (2021, 2018, 2013) Vascular Surgeons who perform Abdominal Aortic Aneurysm (AAA) and Provision of Vascular Services (2018) which recommends Vascular Surgeon 1 per 100,000 capita of population. Office National Statistics (ONS) Population mid-year estimate 2019 (Release date: 24 June 2020): United Kingdom (66,796,800); England (56,287,000); Scotland (5,463,300); Wales (3,152,900); Northern Ireland (1,893,700).

<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates>.

We also looked at the Vascular Surgery Workforce by health administrative region (England) per capita population, **Table 2**. Across the Nations of the UK and within England's Regions we found the ratio of Vascular Surgeons per capita population varied widely across regions which can lead to inequity of access to these essential services.

Table 2. United Kingdom Vascular Surgery Workforce (Consultants), by Region per Capita Population (2021).

Region	Consultants (2021)	Population	Consultants (2021) per capita population (1,000s)
East Midlands	37	4,771,666	1 per 128,964
East of England	48	6,168,432	1 per 128,509
London	75	8,825,001	1 per 117,667
North East	22	2,644,727	1 per 120,215
North West	68	7,258,627	1 per 106,745
South West	50	5,559,316	1 per 111,186
South East	53	9,080,825	1 per 171,336
West Midlands	48	5,860,706	1 per 122,098
Yorkshire & The Humber	46	5,450,130	1 per 118,481
England	447	56,287,000	1 per 125,921
Scotland	36	5,463,300	1 per 151,758
Wales	27	3,152,900	1 per 116,774
Northern Ireland	8	1,893,700	1 per 236,712
United Kingdom	522	66,796,800	1 per 128,951 population

Source: National Vascular Registry (2021, 2018, 2013) Vascular Surgeons who perform Abdominal Aortic Aneurysm (AAA) and Provision of Vascular Services (2018) which recommends Vascular Surgeon 1 per 100,000 capita of population. Office National Statistics (ONS) Population mid-year estimate 2017 (Regions) mid-year estimate 2019 (Nations), Release date: 24 June 2020): United Kingdom (66,796,800); England (56,287,000); Scotland (5,463,300); Wales (3,152,900); Northern Ireland (1,893,700). Highest ratio in **bold**. <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates>.

Whilst improvement in numbers has been noted in most regions we still need more. The Vascular Society of Great Britain & Ireland recommends the minimum number of Consultant Vascular Surgeons to provide safe provision of vascular surgery services is 1 per 100,000 population. That number is comparable to the provision in other similar developed economies Worldwide. To achieve that goal we considered what degree of expansion in numbers would be need across the devolved Nations and the United Kingdom as a whole.

Change in Numbers of Vascular Surgeons in United Kingdom (2013, 2018 and 2021)

We also looked at the change in numbers of Vascular Surgeons across the UK, and devolved Nations, over the periods of our successive workforce reports from 2013, 2018 to 2021, **Table 3**.

Table 3. United Kingdom Vascular Surgery Workforce (Consultants).

Region	Consultants (2021)	Consultants (2018)	Consultants (2013)	Change (8 Years)	Consultants (2021) per capita population (1,000s)
England	447	445	384	+63	1 per 125,921 ↑
Scotland	36	42	39	-3	1 per 151,758 ↑
Wales	27	26	22	+3	1 per 116,774 ↓
Northern Ireland	8	9	13	-5	1 per 236,712 ↑
United Kingdom	518	522	458	+60	1 per 128,951 ↑

Source: National Vascular Registry (2021, 2018, 2013) Vascular Surgeons who perform Abdominal Aortic Aneurysm (AAA) and Provision of Vascular Services (2018) which recommends Vascular Surgeon 1 per 100,000 capita of population. Office National Statistics (ONS) Population mid-year estimate 2019 (Release date: 24 June 2020): United Kingdom (66,796,800); England (56,287,000); Scotland (5,463,300); Wales (3,152,900); Northern Ireland (1,893,700).

<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates>.

The UK has reconfigured to create regional vascular surgery networks with large central inpatient hubs we predict the number of vascular surgeons will need to expand considerably if we are to approach the recommended ideal of 1 per 100,000 as VSGBI (number for tertiary centres), **Table 4**.

Table 4. United Kingdom Vascular Surgery Workforce (Consultants), change needed to achieve recommended target of Vascular Surgeons, 1 per 100,000 Population.

Region	Consultants (2021)	Consultants (Target)	Change (Number)	Change (%)	Target Consultants per capita population
England	447	563	+116	(26%)	1 per 100,000 population
Scotland	36	55	+13	(36%)	1 per 100,000 population
Wales	27	32	+6	(22%)	1 per 100,000 population
Northern Ireland	8	19	+10	(125%)	1 per 100,000 population
United Kingdom	518	668	+150	(29%)	1 per 100,000 population

Source: *National Vascular Registry (2021, 2018, 2013) Vascular Surgeons who perform Abdominal Aortic Aneurysm (AAA) and Provision of Vascular Services (2018) which recommends Vascular Surgeon 1 per 100,000 capita of population. Office National Statistics (ONS) Population mid-year estimate 2019 (Release date: 24 June 2020): United Kingdom (66,796,800); England (56,287,000); Scotland (5,463,300); Wales (3,152,900); Northern Ireland (1,893,700). Estimate for Change for Expansion rounded up to next whole consultant surgeon.*
<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates>.

Unfortunately, whilst the numbers have increased overall, when we allow for population growth we still lag well behind our idealised target and in some Nations and Regions the situation has actually deteriorated which raises serious concerns about accessibility and equity of access to vascular services.

1.3. WORKFORCE PREDICTIONS

Planning Vascular Surgery Training Requirements in the United Kingdom

Vascular surgery has recruited its own specialty trainees since 2013 and has proven a popular and competitive surgical specialty, with significantly more applicants per training number than general surgery and 100% uptake year-on-year of training positions. As a new specialty in 2013 the vascular surgery specialty estimated that around 20 new vascular surgeons per year would be required in UK and this was used to set the number of UK vascular surgery ST3 NTN in 2013, distributed across England (16), Wales (one), Scotland (two), and Northern Ireland (one). These 20 posts were not new commissions but were taken from general surgery posts, which was appropriate as vascular surgeons had previously trained within the general surgery curriculum. The vascular surgery specialty has more recently revised its projected vascular surgeon requirement to between 26 and 29 per year in the UK to maintain status quo. This was discussed with HEE and resulted in HEE medical education commissioning proposals to rebadge a further eight general surgery ST3 posts to vascular surgery in England for 2015/16 (HEE, 2015), bringing the total vascular surgery NTN in England to 24 from 2015.

Table 5. Predicted Ideal United Kingdom Vascular Surgery Workforce (Consultants & Trainees), by Region (per 100,000 population).

Region	Consultants Ideal Predicted (increase from 2021)	Population	Trainees (Ideal Predicted 0.4 Ratio)
East Midlands	48 (+11)	4,771,666	19
East of England	62 (+14)	6,168,432	25
London	88 (+13)	8,825,001	35
North East	26 (+4)	2,644,727	10
North West	73 (+5)	7,258,627	29
South West	56 (+6)	5,559,316	22
South East	91 (+38)	9,080,825	36
West Midlands	59 (+11)	5,860,706	24

Yorkshire & The Humber	55 (+9)	5,450,130	22
England	563 (+116)	56,287,000	225
Scotland	55 (+19)	5,463,300	22
Wales	32 (+5)	3,152,900	13
Northern Ireland	19 (+11)	1,893,700	8
United Kingdom	668 (+146)	66,796,800	267

Source: National Vascular Registry (2021, 2018, 2013) Vascular Surgeons who perform Abdominal Aortic Aneurysm (AAA) and Provision of Vascular Services (2018) which recommends Vascular Surgeon 1 per 100,000 capita of population. Office National Statistics (ONS) Population mid-year estimate 2017 (Regions) mid-year estimate 2019 (Nations), Release date: 24 June 2020): United Kingdom (66,796,800); England (56,287,000); Scotland (5,463,300); Wales (3,152,900); Northern Ireland (1,893,700). Highest ratio in **bold**.
<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates>.

To maintain a stable workforce the ratio of trainees in program to consultants in post is preferred at a ratio of 0.4, to maintain workforce supply. Considering England's training requirements if the ideal number of vascular surgeons is 563, to maintain workforce supply England should have 225 (0.4 ratio) NTN in vascular surgery over a 6-year training programme that would represent and intake of 38 NTN in vascular surgery per year for England alone. Considering national recruitment for the entire United Kingdom that number to maintain the workforce would be at least 267 NTN or an intake of 45 NTN in vascular surgery per year. Obviously, there are other factors at play and as legacy general surgery (including vascular surgery) continue to separate fully and as we welcome the new consultants emerging from the specialist vascular surgery training programme in 2019 the position of vascular surgery within the wider umbrella of surgical specialties will become clear.

In 2021 we had concluded that to maintain workforce supply in United Kingdom we would recommend between 35 and 45 NTN in vascular surgery each year in the United Kingdom (30 to 38 in England).

Reconfiguration of Vascular Surgery Services in United Kingdom (2013 to 2018)

The Vascular Society of Great Britain & Ireland made recommendation on service reconfiguration in The Provision of Vascular Services 2012, updated in 2015 and 2018. A new POVS update is due in November 2021. There is substantive evidence that clinicians, clinical managers, and commissioning groups across the United Kingdom are engaged in a process of re-configuration of Vascular Surgical Services. This has led in many regions to the creation of organized clinical networks with inpatient vascular surgery services being provided in central "hub" hospitals by large teams (8, or more) and outpatient and day-case services being provided in the regional "spoke" hospitals by ambulatory vascular surgical teams.

Currently, if fully implemented these changes are likely to result in the re-configuration of emergency and inpatient Vascular Surgical Services to a smaller number of Vascular Surgery Centres, perhaps only 50, located in large Acute NHS Hospital Trusts across the United Kingdom. These Centres will provide for the needs of between 0.9 million and 1.26 million (or greater) population. It is also likely that a smaller number of these Centres, perhaps between 10 and 20, will become super-Specialist Tertiary Referral Centres for complex Open and Endovascular Surgery. These will provide for the needs of

between 3.15 million and 6.3 million (or greater) population. To provide safe and sustainable 24/7 elective and emergency Vascular Surgery Services within these units, we should expect a significant expansion of current specialist Consultant Vascular Surgeons. Historically in the United Kingdom the majority of Surgical Emergencies, including Trauma, have been managed by General Surgeons. Many General Surgeons are no-longer equipped to manage Vascular Surgery Emergencies due to changes in their training curriculum, skill-set, and experience. Therefore, the majority of these units will have between 8 and 10 Consultant Vascular Surgeons to provide safe and sustainable 24/7 emergency cover.

The VSGBI in its updated "Provision of Vascular Services 2018" recommends a minimum of 1 vascular surgeon per 100,000 population, comparable with other similar developed economies Worldwide. Currently the ratio of vascular surgeons per capita population in the United Kingdom is 1 per 129, 000.

Predicting the Future Vascular Surgery Workforce in the United Kingdom

A Worldwide Perspective on Demand for Vascular Surgeons and Vascular Activity

Vascular surgery is a new surgical specialty in the UK but is well established as an independent specialty in several countries within Europe, and in North America, Australia, and Asia. In developed countries, both the number and complexity of vascular surgery procedures per capita population is increasing year-on-year. Fowkes et al., in their analysis of reported global trends noted a significant increase in the prevalence of peripheral arterial disease over the decade ending 2010. In the United States America (USA) the Healthcare Cost and Utilization Project Nationwide Inpatient Sample has demonstrates a net increase in vascular surgery procedures and based on these trends they have predicted inpatient vascular surgery workload to increase (compared to 2008) by 18% by 2015, 34% by 2020, and 72% by 2030.

In the USA in 2008, it was reported that the estimated ratio of vascular surgeon per capita population was approximately 1 per 108,000 population. France, a close European neighbour to the UK with a similar population size, demographic, and socio-economic status, has 611 active vascular surgeons giving them an estimated ratio of vascular surgeon per capita population of approximately 1 per 107,000 population. France has also predicted a 61% increase in major vascular surgery interventions by the year 2030. Combined with the effect of an increasing and increasingly aged population, they have predicted that they would need a 30% (circa 183) increase in the numbers of consultant vascular surgeons. Both of these studies recognize a dramatic increase in vascular workload and recommend that vascular surgery training processes would need to adapt to ensure an adequate number of trained vascular surgeons are available to provide quality vascular care in the future. Obviously there are significant differences between the healthcare systems in these comparator countries, which make direct comparison difficult. However, despite their concerns both of these countries already have significantly greater numbers of vascular surgeons per capita population than the UK where it may be as low as 1 consultant per 137,000 population (i.e. 7 vascular surgeons per million population).

Recent data from the USA suggests that if historical trends continue, a majority of surgical specialties, including vascular surgery, are estimated to experience workforce deficits, increasing clinical demands substantially.

Obviously, there are significant differences between the healthcare systems in these comparator countries, which make direct comparison difficult, but despite their obvious concerns both countries have significantly greater numbers of vascular surgeons per capita population than the UK.

Flashback to 2016: General (and Vascular) Surgery United Kingdom Stocktake 2016

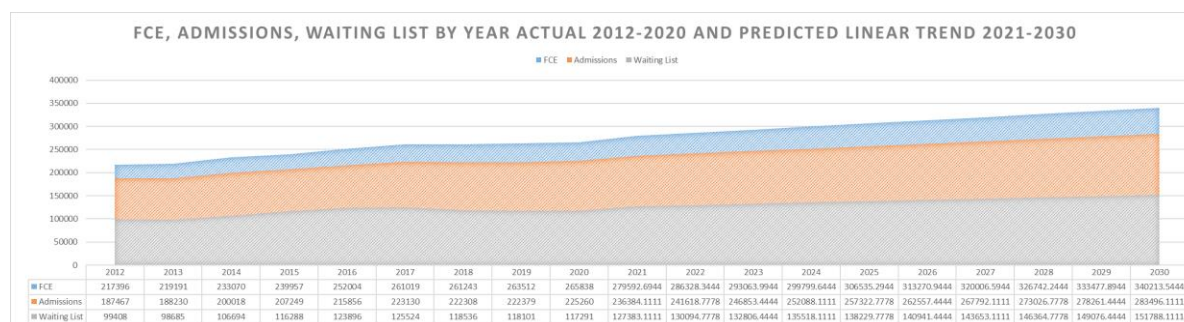
The Centre for Workforce Intelligence (CfWI) was commissioned by Health Education England (HEE) and the Department of Health (DH) to undertake a stocktake of the general surgery (and vascular surgery) workforce in England. HSCIC data (HSCIC, 2014) shows that there were 2,077 general (and vascular) surgery consultants (HC) in England in September 2013. The general surgery (including vascular surgery) consultant workforce had grown from 1,457 full-time equivalent staff (FTE) in 2003 to 2,029 FTE in 2013 (HSCIC, 2014); a 39 per cent increase and a compound annual growth rate of 3.4 per cent. Based on these figures and assumptions above it is fair to assume that as of September 2013 around 21 per cent (437/2,077) of general surgeons were practising as vascular surgery consultants. The principal projection of patient demand for general surgery (including vascular surgery) forecasts growth of around 67 per cent by 2029, as a result of a growing and ageing population, greater average individual patient need and decreasing surgeon productivity.

Therefore, all available estimates would suggest that at least 21% of the legacy General Surgery (including Vascular Surgery) workforce are specialist vascular surgeons and demand in both general and vascular surgery is predicted to increase by 67% by the year 2029 (13 years).

Predictions using Hospital Admitted Patient Care Activity Trends in United Kingdom

The Hospital Admitted Patient Care Activity (NHS Digital – England) shows year-on-year increases in vascular activity for Finished Consultant Episodes (FCE), Admissions and Waiting Lists from 2012-2020 and by extrapolation using linear trend to 2030, **Table 6**.

Table 6. Hospital Admitted Patient Care Activity (NHS Digital – England) shows increases in Vascular Activity for Finished Consultant Episodes (FCE), Admissions and Waiting Lists year on year from 2012-2020 and by extrapolation to 2030.



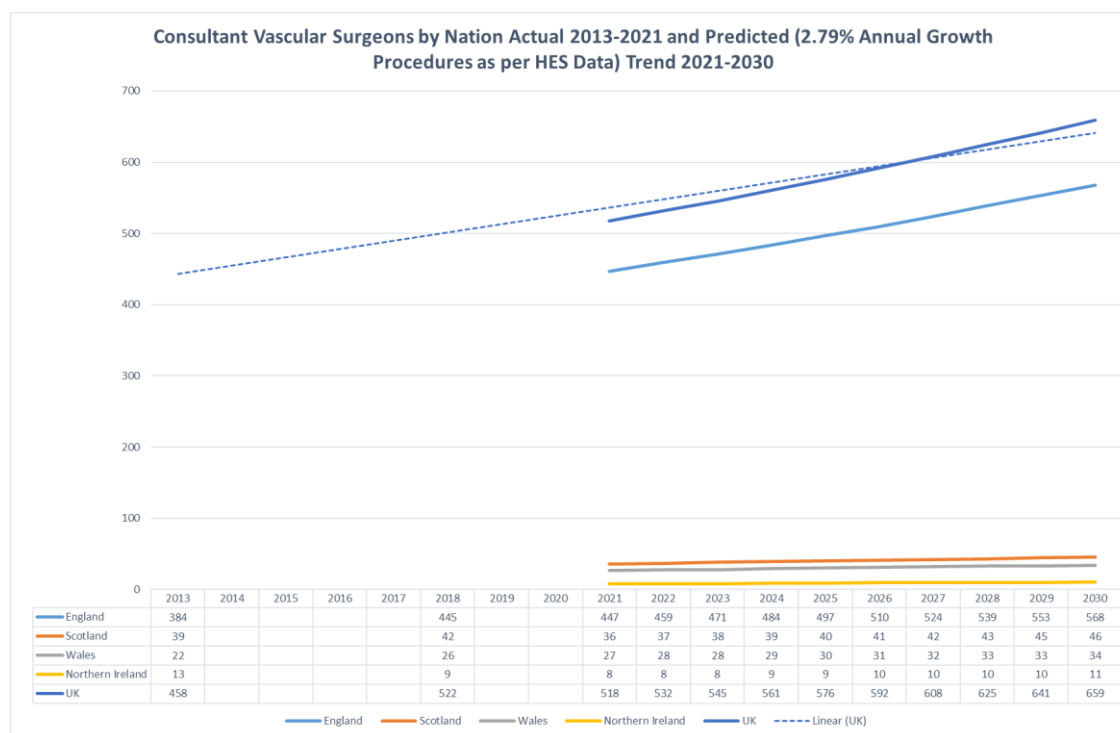
Hospital Admitted Patient Care Activity (NHS Digital – England) shows increases in Vascular Activity for Finished Consultant Episodes (FCE), Admissions and Waiting Lists year on year from 2012-2020. Conservatively this would show a 2.79% Annual Growth in Vascular Procedures.

We can see that increasing demand will become substantial and part of the solution will require an increase in our vascular surgeon consultant workforce, **Table 7**. We will see in subsequent sections that our Vascular Surgery Workforce Survey 2021 again confirms that current Vascular Surgeons are self-reporting working longer hours and are contracted to work longer hours (average more than

120% recommended contract) than would be considered healthy and sustainable. Therefore, it is highly unlikely that increased efficiencies can be a solution to manage the increasing demand for vascular activity. Therefore, part of the solution will be an increase in workforce through better retention or increased recruitment.

Therefore, we can predict future workforce for Consultant Vascular Surgeons by Nation using actual Workforce Numbers (2013, 2018 and 2021) from our previous Workforce Reports and applying an annualised 2.79% growth and by extrapolation using linear trend from 2021-2030

Table 7. Consultant Vascular Surgeons by Nation Actual 2013-2021 and Predicted (2.79% Annual Growth Procedures as per HES Data) Trend 2021-2030



If the vascular workforce is to keep pace with the increasing demand for vascular services we need a significant increase of workforce are to meet that demand.

Prediction would suggest we need to increase the Vascular Surgeon Workforce in the United Kingdom by an annual 2.79%, or 28% over the next 10 years, to create 659 Vascular Surgeons by 2030.

Summary

There is a recognition in developed economies Worldwide that due to changing demographics and vascular disease patterns that there is an increase in both the number and complexity of vascular surgery interventions. Furthermore, there is a recognition that there needs to be an increase in the number of Vascular Surgeons in those Countries if that increased demand is to be met. In the United Kingdom the number of Vascular Surgeons and Vascular Surgery Trainees per capita population is amongst the lowest of any developed economy Worldwide. Furthermore, within the United Kingdom there are gross regional disparities in the numbers of Vascular Surgeons serving those regional populations which can lead to a gross inequity of access to those essential vascular services.

2. WORKFORCE SURVEY 2021

Workforce planning is the process by which we ensure that an organisation has the right number of employees with the right knowledge skills and behaviours in the right place, at the right time.

Workforce plans are the foundation that resource management activities such as recruitment, selection, orientation, training, and retention are built on. There are many factors which may impact of the shape of our vascular surgery service in the future and the workforce needed to provide it, and these include: reconfiguration of services; advances in healthcare practice; financial and political decisions. Of course any planning must recognise the uncertainty of the future but using good intelligence robust estimates can be made.

Before we can design the future we must have a clear understanding of the past and present, and this paper will discuss the evidence which might inform our future planning and present a strategy for looking forward.

Methodology

The Vascular Society Workforce and Wellbeing Survey 2021 represents an update of our previous published survey conducted in 2013 and 2018, and was conducted on behalf of the membership of our Specialty Association, the Vascular Society of Great Britain & Ireland and in conjunction with the Specialty Advisory Committee (SAC) for Vascular Surgery of the Joint Committee for Surgical Training (JCST).

The Vascular Surgery United Kingdom Workforce Survey 2021 used a modification of our previously published questionnaire, used previously in 2013 and 2018, designed using a modified Delphi Process and delivered via a common web-survey platform (SurveyMonkey®) it contained 120 questions covering the following domains: Data Consent (Q1,2); Personal Characteristics (Q3-13); Job Characteristics (Q14-51); Vascular Surgery Practice (Q52); Hospital Resources (Q53-68); Professional Activities (Q69-79); Work-life Balance and Wellbeing (Q80-100); Inclusion and Belonging (Q101-115); The Vascular Society and our Workforce Survey (Q116-120) **Appendix 1**. Question 120, provided an opportunity for members to enter free-text comments, questions and concerns **Appendix 2**.

We have considered survey responses under the following themes:

- Personal Characteristics
- Job Characteristics
- Scope of Vascular Surgery Practice
- Hospital Resources
- Professional Activities
- Work-life Balance and Wellbeing
- Inclusion and Belonging
- Members Feedback to Vascular Society

All Ordinary-Members of the Vascular Society, our specialty association, were invited to participate in the survey. Invitations from the Vascular Society were sent to the registered email address of 300 Ordinary Members in November 2020, and reminders were sent in January and February 2021. As of April 2021 we had received 224 responses, of which consent to consider data was received from 139 Consultant Vascular Surgeons and 27 Vascular Surgeons in Training, and these represented our cohort for analysis.

2.1 PERSONAL CHARACTERISTICS

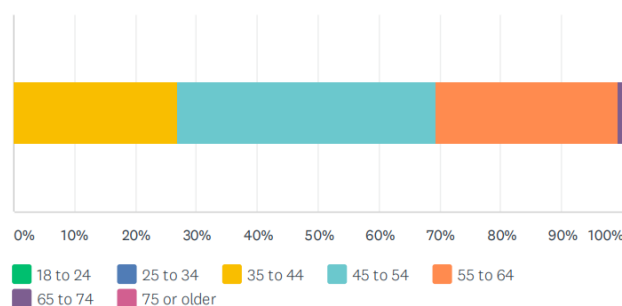
Total Cohort Characteristics

We asked respondent to identify their current job (Q3 What is the job title for your current position?) to allow separate analysis for Consultant Surgeons and Surgeons in Training. Response was completed by 173/224 (77%) of respondents, and representation was as follows: 139 Consultants (Substantive 135; Locum 4); 27 Trainees (Specialty Trainee 25; Specialty Doctor 1; Clinical Fellow 1). Further analysis was filtered by separation into these respective groups.

Consultant Age Demographics

We asked Consultants what age they were (Q4 What is your age?), and the average age was 49 years (range 35 to 67 years), and we had no respondents under the age of 35 years old and must assume the majority of consultant vascular surgeons are appointed at that age or greater. The current retirement age is 67 years in the United Kingdom. We also ask Consultants to indicate to which age-range they belonged (Q5), **Figure 1**.

Figure 1. Consultant Age by Range.

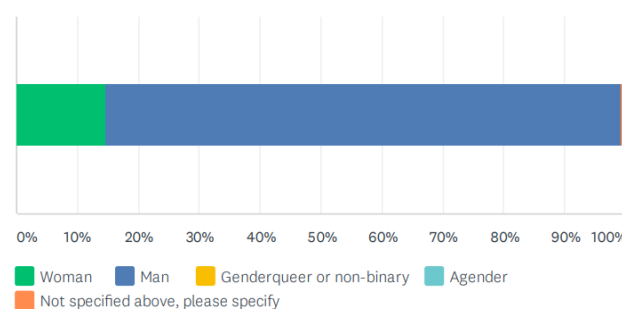


The age distribution is standard for a medical workforce with few people working beyond 60 years old, with retirement age in UK currently 67 years.

Consultant Gender Demographics

We asked Consultants to declare their gender identity status (Q6 What is your gender identity?), and found that 84.67% identified as Man and 14.60% identified as Woman, **Figure 2**. Amongst other gender identity options, Genderqueer or non-binary (0%), Agender (0%), and Not specified above (n=1, 0.73%).

Figure 2. Consultant Gender Identity.



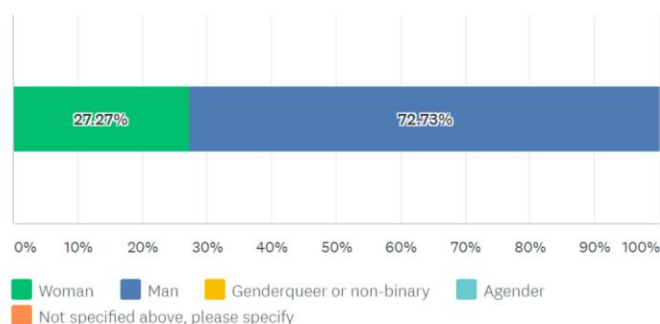
This represents a further small but significant incremental improvement since 2018 when 90% and 2013 when 92.5 percent were noted to be Male, but needs further significant improvement.

Gender Demographics in Newly Appointed Consultants and Surgeons in Training

We also looked at gender identity within the specialty trainee grade and across the respective consultant career points.

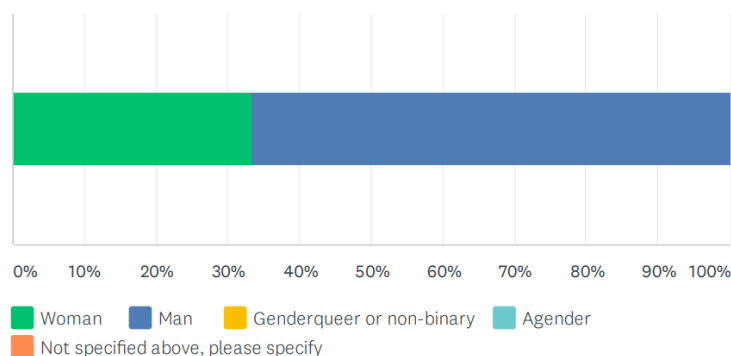
When we consider New Consultants (in post for 5 years, or less) to declare their gender identity, reassuringly the number New Consultants appointed who identify as Woman is much higher and 27.27% and more representative of the higher numbers of Women training to be Vascular Surgeons and more reflective of society at large, **Figure 3**.

Figure 3. Newly Appointed Consultants Gender Identity.



Reassuringly nearly twice as many of the new specialty trainees than current consultants identify as Women, 33.33%, and as they become consultants will narrow the gender gap. However, a lot more needs to be done to encourage more female doctors into Vascular Surgery, **Figure 4**.

Figure 4. Specialty Trainee Vascular Surgery Gender Identity.

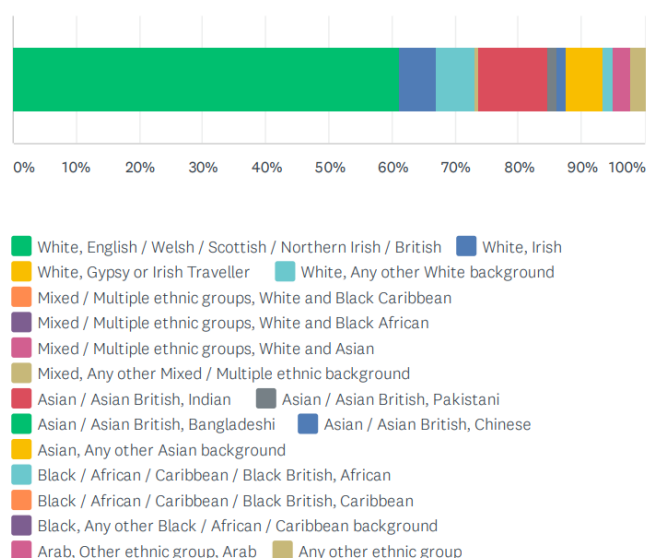


These results would suggest increasing numbers of Women are choosing a career in Vascular Surgery and becoming Consultants and will act as positive role models to encourage further gender rebalancing within our specialty, but again much more needs to be done to make Vascular Surgery and attract career choice for female surgeons.

Gender Diversity, is increasing, especially amongst newly appointed consultants and trainees.

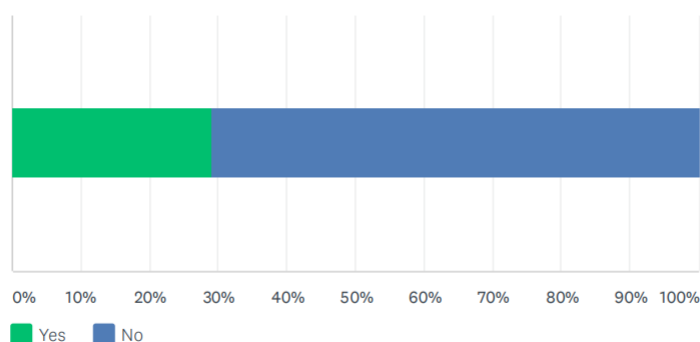
Consultant Race/Ethnicity Demographics

We asked Consultants to declare their race/ethnicity which best described them (Q7 What race/ethnicity best describes you?), and found that 72.99% identified as White (English/Welsh/Scottish/Northern Irish/British/Irish/Any other White background) and 27.01% identified as Non-White, **Figure 5**.

Figure 5. Consultant Race/Ethnicity Identity.

Amongst Consultants who identified as Non-White, the commonest identities were: Asian/Asian British Indian 10.95%, Any other Asian background 5.84%, Pakistani 1.46%, Chinese 1.46%; Black/African/Caribbean/Black British, African 1.46%; Arab 2.92%. Therefore, the degree of diversity in respect to race/ethnicity is greater within the vascular surgery consultant body compared to the population at large. However, there is a relative under-representation of those who identify as Black, and a relative over-representation of those who identify as Asian, as compared to the general population.

We also asked Consultant to specify whether or not they were born outside of the United Kingdom or Ireland (Q8), **Figure 6**.

Figure 6. Place of birth outside United Kingdom and Ireland.

We find that 29.10% of all Consultants in Vascular Surgery currently working in the United Kingdom and Ireland were born outside of the United Kingdom and Ireland. Nearly all of these had specified they identified their Race/Ethnicity as being Non-White.

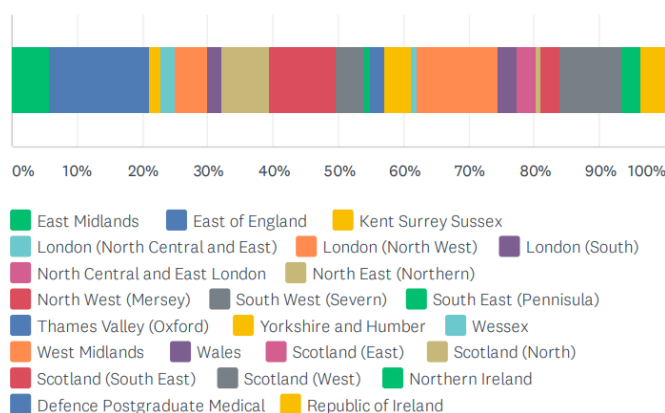
The Race/Ethnicity Diversity in Vascular Surgery is greater than general population.

Regional Distribution Respondents

We asked respondents to identify from which region of the UK they were based (Q11 In which postgraduate education deanery of the United Kingdom or Ireland do you work?) and received

responses from every Nation and Region of the United Kingdom and from Ireland, and as such our survey is again representative of Vascular Surgery practice in these Islands, **Figure 7**.

Figure 75. United Kingdom and Ireland Regional Distribution of Respondents.



Reconfiguration of vascular surgery services has occurred across most regions of the UK and Ireland to create clinical networks with Hub-and-Spoke and inpatient arterial workload being conducted at the central Hub. Consultants specified where they carried out their inpatient arterial work (Q12 In which hospital do you carry out the majority of your inpatient arterial work?) and in 2021 that number has reduced to only 56 Acute Hospital Trusts in the UK, by comparison in 2013 this included over 95 Acute Hospital Trusts.

Centralisation has seen the number of Inpatient Arterial hubs reduce across the United Kingdom.

Summary

The personal characteristics of our vascular surgery workforce are similar to that seen within other surgical specialties but are changing to become more diverse than ever before. There has been a small but significant increase consultant vascular surgeons who identify as women overall and particularly amongst those most recently appointed. Furthermore, women are represented in much higher numbers than ever before amongst our surgeons in training, which would suggest that the number of female vascular surgeons is increasing and we would hope that will continue. We need to do more to make vascular surgery an attractive specialty by improving access to the specialty and allowing more flexible work-patterns. The proportion of vascular surgeons who identify as Non-White in respect to Race/Ethnicity is greater than that of the general population and as such the specialty of vascular surgery is even more diverse than the general population. However, much more needs done, not only to ensure barriers to race/ethnicity do not exist and to ensure proportionate representation is seen at all stages of career and within representational roles with professional bodies.

2.2 JOB CHARACTERISTICS

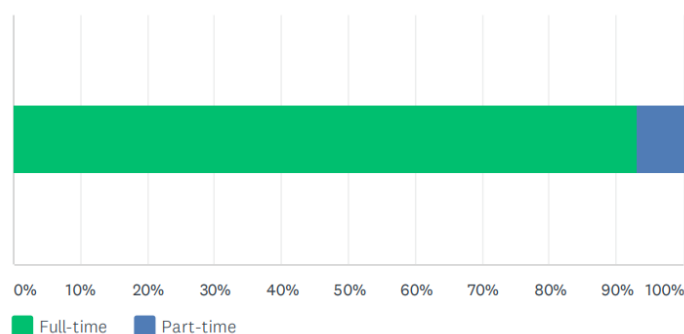
Consultant Job Characteristics

The Consultant survey population considered their job function (Q14) to be considered a Vascular Surgeons (89.47%), a General and Vascular Surgeon (9.02%) and a Trauma Surgeon (1%). Surgeons where asked to specify what percentage of their jobs involved vascular surgery (Q16) and the vast majority 94.03% confirmed it involved more than one-half (51 percent, or more) and a large majority (88.06%) confirmed it involved more than three-quarters (more than 75 percent).

Full-time or Part-time Working

We asked Consultant whether they worked full-time or part-time (Q26), and most consultants now work full-time (93.23%), an increase from 2018 (91%), **Figure 8**. The majority also continue to work full-time through the respective phases of their career with even most (83%) of those established in post for over 25 years.

Figure 8. Full-time Working across the Career Points.

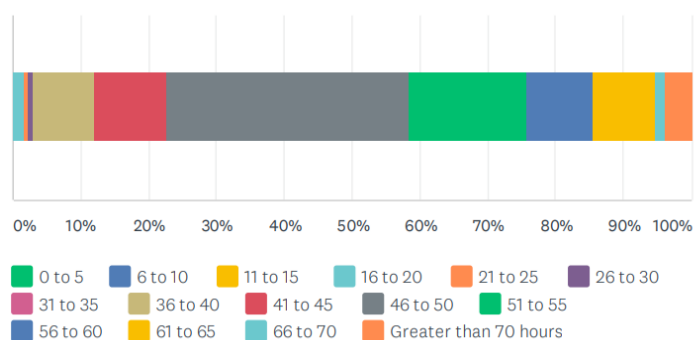


It is also of interest to note that there is no obvious difference in the percentage of female as compared to male consultant vascular surgeons who work part-time as compared to full time, when we compared working-time (Q26) with gender identity.

Estimated Hours Worked

We asked Consultant Surgeons how many hours they worked in an average week (Q33), with 87.89% reporting they work longer than the normal contracted 40 hours per week and recommended for a healthy work-life balance, **Figure 9**.

Figure 9. Consultants average hours worked per week.



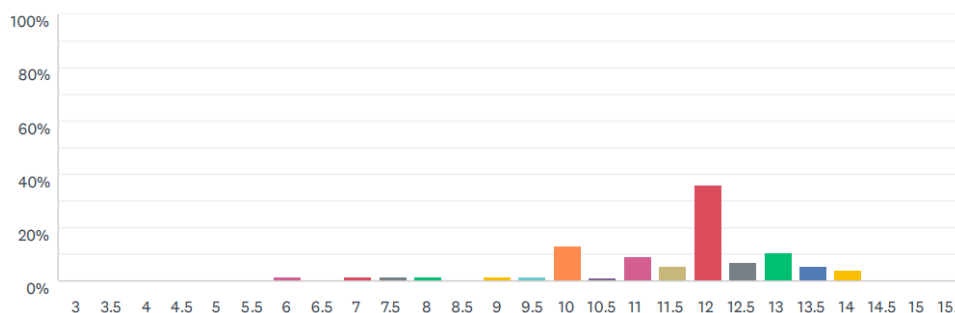
Concerningly, as many as 14.4% report they work greater than 60 hours per week, which has been associated in surgeons with increased medical errors and burnout. There was no significant difference in hours worked between the respective genders.

Contracted Hours Worked

We asked Consultant Surgeons to declare from their job-plan how many hours they were contracted to work (Q28-30). The commonest Job-plan for consultant vascular surgeons with 36.09% working a

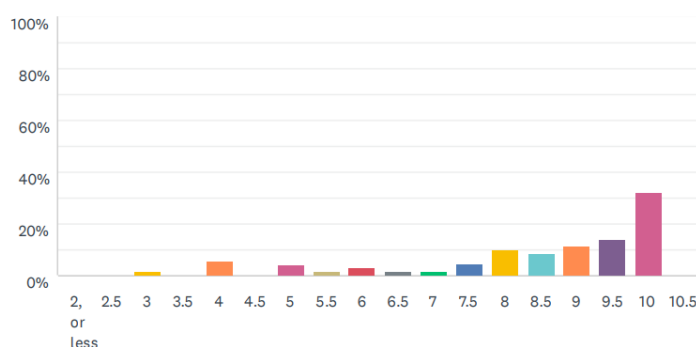
total of 12 Programmed Activities (PA), **Figure 10**. Concerningly over 78.19% are working more than the recommended 10 PA contract. Thankfully this has decreased slightly from 2018 (88%) but needs further improvement. There is no significant difference in Job-planned PA allocation between genders.

Figure 10. Total Job-plan Programmed Activities (PA).



We asked Consultant Surgeons to declare from their job-plan how many hours they were contracted to work which involved direct clinical care (Q29). The component devoted to Direct Clinical Care (DCC) was an average of 8 PA (Range 2 to 10.5 PA), with 76.56% providing more than 7.5 PA DCC, **Figure 11**.

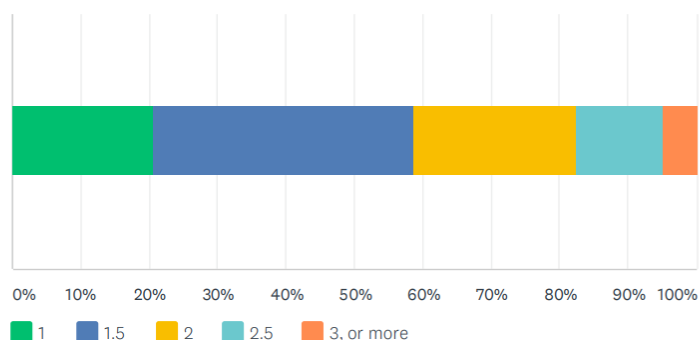
Figure 11. Direct Clinical Care Professional Activities (DCC PA).



The typical Job-Plan includes as part of Direct Clinical Care (DCC) some 2 Theatre Sessions, 1 Day Procedure Unit (DPU) Session and 2 Outpatient Clinic Sessions.

We asked Consultant Surgeons to declare from their job-plan how many hours they were contracted to work which involved Supporting Professional Activities (SPA), (Q30). These are essential to maintain continued professional development and allow preparation for annual appraisal and cyclical revalidation. The commonest SPA allocation was only 1.5 PA (38.10%), with the vast majority getting 2, or less, SPA (82.54%), **Figure 12**. These allocations are much less than the recommended allowance for Job-Plans which significantly exceed 10 PA in total and have a very high proportion of DCC.

Figure 12. Consultants programmed Supporting Professional Activities (SPA).



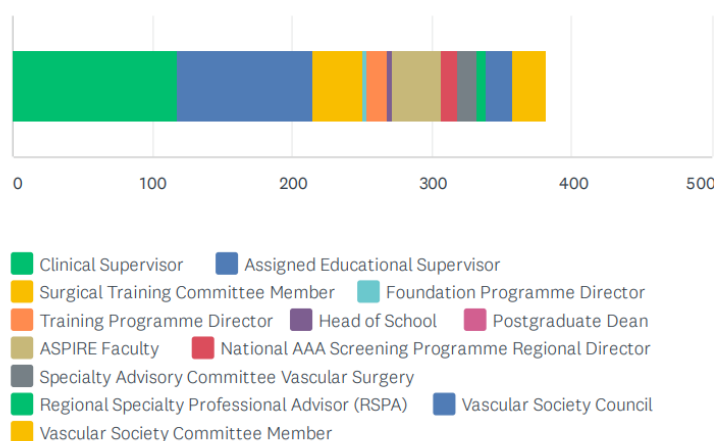
Furthermore, this is even more concerning when one considers that much of this SPA activity is in part accounted for by important Additional Responsibility Allowance (ARA) for senior management and educational roles (Q31), with over 67.63% reporting that they have some ARA allowance.

Vascular surgeons self-reported hours worked and contracted hours exceed that which has been recommended for a health work-life balance and in some cases are so excessive they may place their patients at increased risk of adverse incidents and themselves at risk of occupational burnout.

Additional Educational, Academic, Management and Professional Roles

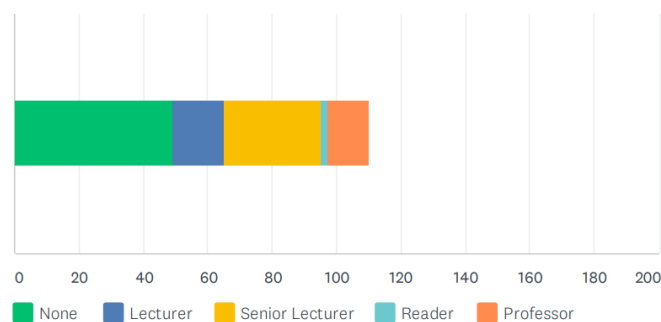
Many consultant vascular surgeons have additional roles as educators, academics, managers and representatives on professional bodies (Q70). We take great pride in being an evidence-based and innovative specialty, in large part supported by these additional activities of our members, **Figure 13**.

Figure 13. Consultants educational or professional roles.



We asked Consultant Surgeons to declare the most senior official academic appointment they had held (Q72), and are reassured to note that the majority (55.45%) have held, or do hold, an academic position. We are delighted that many have also held senior academic positions, such as: Senior Lecturer (27.27%); Reader (1.82%); Professor (11.82%).

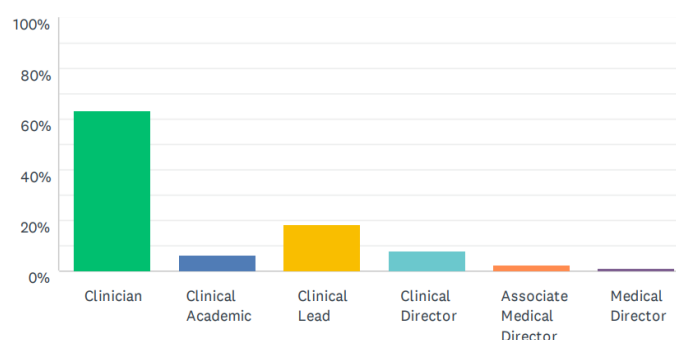
Figure 14. Consultants Official Academic Appointments.



The proportion who have a clinical academic role also reassuringly appears relatively constant. Our survey also shows Vascular Surgeons also contribute to education as Examiners to both undergraduate and postgraduate education (Q71), as follows: undergraduate medical (88.66%); MRCS (16.49%); Intercollegiate FRCS (27.84%). Furthermore, a significant minority also contribute internationally as Examiner at a European Board of Surgery Vascular Examinations, FEBVS (5.15%).

Medical Leadership and Management of Surgical Teams is also a vital component of our health service. Whilst most vascular surgeons identify their primary job role (Q69) as a Clinician (63.71%), many also contribute to a range of medical managerial roles, including Clinical Director (8.06%), Associate Medical Director (2.42%) and Medical Director (0.81%), **Figure 14**.

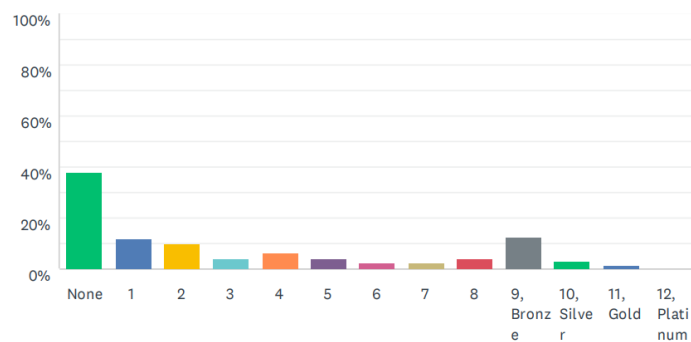
Figure 15. Consultants in Medical Management.



These roles bring additional responsibility and may be job-planned or attract additional reimbursement. In England these are also recognised through the Clinical Excellence Award Scheme (CEA), with a scale of awards which provide additional financial payments, which especially for the higher awards can almost double salary and which are permanent and pensionable, **Figure 16**.

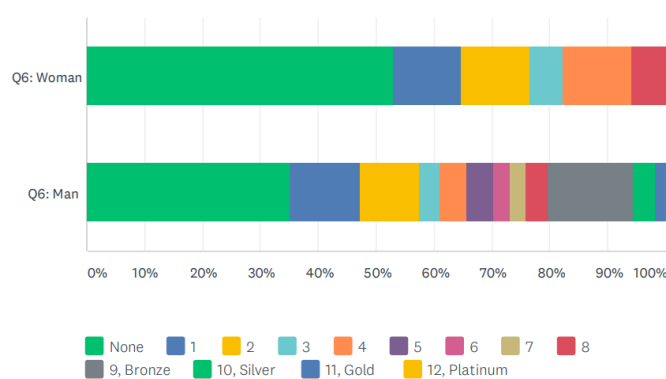
Consultant Vascular Surgeons carry a number of important additional roles in education, academia, medical management and as representatives on professional bodies.

Figure 16. Clinical excellence award (CEA) Scheme.



However, the scheme is not equitable and can conceal an unfair pay disparity or pay-gap. If we look at gender, women are much less likely to receive any award and none receiving senior awards (Bronze, Silver, Gold or Platinum). Race/Ethnicity do not appear to adversely impact on CEA awards.

Figure 17. Clinical excellence award (CEA) Scheme, Comparison by Gender.

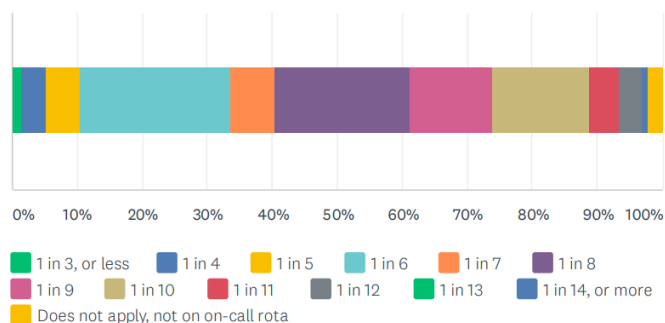


The even greater tragedy here is that the so-called national health service in the UK has a devolved health strategy and using the opportunity of the financial crisis in 2008 to suspend new entry to the scheme some of the devolved nations such as Northern Ireland have suspended and never restored the scheme meaning a whole generation of doctors have been excluded from accruing CEA awards at very significant financial loss over the last 13 years which will extend career-long and into retirement.

Emergency, Unscheduled Care and On-call Commitment

Vascular Surgery is a specialty with a high proportion of urgent or emergency conditions presenting as unscheduled care. On-call commitment outside of normal working hours and at weekends is essential to meet the increasing demands of 7-day healthcare and to provide emergency cover. We asked Surgeons what is their on-call commitment (Q43) and found the commonest remains 1 in 6 (23.13%), but thank fully the number of consults with more intense on-call frequency has reduced with those working 1 in 5, or less, now representing only 10.44%.

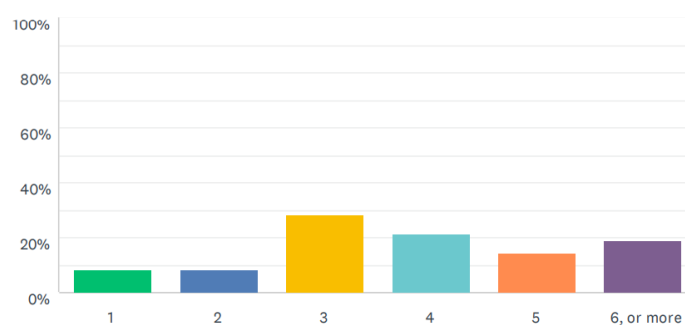
Figure 18. On-call Commitment.



Clearly with centralisation and a reduction in the number of inpatient arterial units nationally on-call rotas have combined, with many rotas moving to 1 in 8, 1 in 9 or 1 in 10. However, it is worth noting that with larger centres these less frequent on-calls will become more busy and attract increasingly complex cases. In large centres many vascular surgeons also contribute to trauma rotas (Q44, 11.36%) and if not officially first-responders will provide emergency support as vascular secondary-responders.

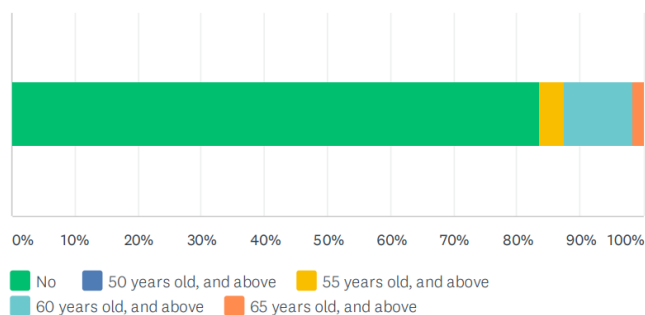
Thankfully the vast majority (79.55%) are now free from elective day-time commitments when on-call, although that number should really be All. We asked Surgeons how many hospitals do they cover when on-call (Q46) and with centralisation of services we see the on-call vascular surgeon at the network Hub are covering more hospitals within the network, with the vast majority covering at least 3 (83.2%) and nearly one-fifth (19.08%) covering 6, or more hospitals, **Figure 19**.

Figure 19. Hospitals Covered When On-call.



As the complexity and demands of out-of-hours on-call cover increase one must pose the question is it appropriate for older surgeons to continue to deliver this physically and mentally demanding role. We asked whether surgeons leave the on-call rota at a certain age (Q47), unfortunately, the majority (83.59%) of teams do not, slightly improved from survey in 2018 (89%), but encouragingly a minority (10.94%) allow surgeons 60 years old, or at 65 years old (1.56%) and above to leave the on-call rota.

Figure 20. Do Consultants stop On-call when Older.



One of the most commonly cited reasons for not allowing older surgeons to leave the on-call rota is that the condensed on-call burden will increase for the remaining team members. We asked surgeons at what age they felt it inappropriate to be on-call for vascular surgery emergencies (Q48) and in contrast to real-world practice many felt surgeons should leave the emergency on-call rota above a certain age, with most selecting above age 55 years (15.75%), above 60 years (46.46%) or above 65 years old (25.98%)?

Providing on-call emergency cover to a large network of hospitals have increased the demands upon the on-call surgeon and team, both in respect to the number and complexity of emergencies to manage.

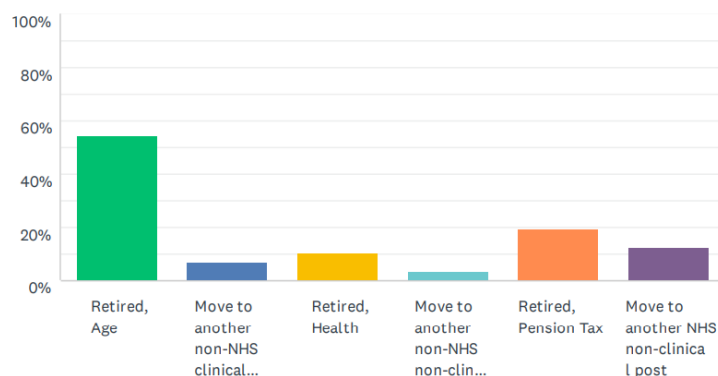
The physical and mental demands of emergency on-call work are significant and the adverse health effects of the associated stress and disruption to circadian rhythms have been well documented.

Intention to Retire

One of the big challenges for the health service is retention of experienced staff. The concern is that we will be losing some of our most experienced surgeons to early retirement and that knowledge base will take years to replace.

We have previously reported that many vascular surgeons have considered early retirement, and with an existing deficit in numbers of vascular surgeons per capita population, the loss of surgeons and particularly the loss of experienced surgeons is a major concern. We asked surgeons who planned to retire to state the main reason for leaving (Q85), and whilst the majority cited retirement age as the main driver (54.39%) concerningly the next commonest reason cited was the Pension Tax (19.30%), other reasons given included health (10.53%) and leaving clinical practice for another non-clinical position within the NHS (12.28%) or outside the NHS (3.51%), **Figure 21**.

Figure 21. Main reasons for Retirement.



The loss of experienced vascular surgeons, in a specialty where experience is vital to patient safety, is of grave concern, especially when drivers are to retire from clinical practice or avoid pension taxation.

Summary

The job characteristics within vascular surgery again show that vascular surgeons are being contracted for an working too many hours to maintain a sustainable work-life balance. In a high intensity procedural specialty such as vascular surgery long hours lead to early burn-out of surgeons with both professional and personal problems and this is a risk to patient safety. Many studies have shown the detrimental effects on health of night-work and shift-working and those dangers increase with duration and age. Because of its large emergency workload and the time-sensitive nature of many acute vascular catastrophes such as aneurysm rupture, limb ischaemia and vascular trauma the intensity of on-call work has increased. We are also covering much larger catchment areas as we have regionally reconfigured to centralised emergency vascular Hubs and whilst we have excellent trainees they require close supervision in the modern surgical environment. When teams increase in size the frequency of on-call reduces and allows the opportunity to remove surgeons in later career from the on-call rota perhaps ideally at age 55 or 60 years old.

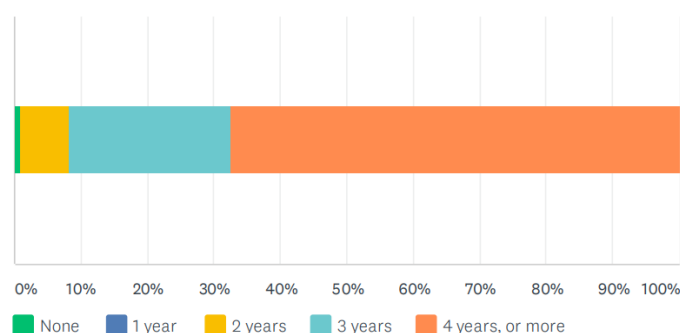
2.3 SCOPE OF PRACTICE

Vascular Surgeons treat a broad range of conditions affecting the arteries, veins and lymphatics. In a rapidly evolving specialty such as Vascular Surgery the modern Vascular Surgeon requires a range of competencies in vascular medicine, vascular surgery and endovascular therapy. Workforce planning is the process by which we ensure that an organisation has the right number of employees with the right knowledge skills and behaviours in the right place, at the right time. The Vascular Society made recommendation on standards for a vascular surgery service in their documents “The Provision of Vascular Services 2021 (Updates on 2018, 2015 and 2012)”. The Vascular Society has also recommendations on the standards for Specialist Training in Vascular Surgery and Vascular Surgery Training Centres. With the evolution of Vascular Surgery to become a separate surgical specialty there has been an increase in the amount of training time spent in specialist vascular surgery and a reduction in in exposure to general surgery. Many vascular surgeons also seek additional out of programme training to gain additional skills in high-volume super-specialists units in the United Kingdom and Ireland or Worldwide.

Specialty Training in Vascular Surgery

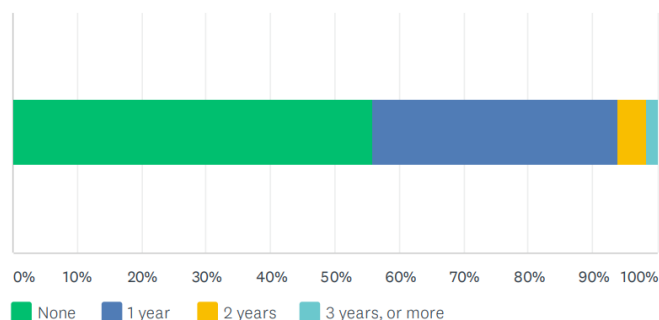
Vascular Surgery Training has also changed, to meet the modern demands of Vascular Surgery, with the trend over the years to spend more dedicated time in recognised specialist vascular training units (Q17), with the vast majority (67.42%) now having spent 4, or more, years in specialist vascular training units compared to our older consultants who had perhaps spent only 30% (Surveys 2013 and 2018), **Figure 22**. That is a reflection of vascular surgery as a sub-specialisation of general surgery and then developing to become a separate surgical speciality.

Figure 22. Specialist vascular surgery training by Career Stage.



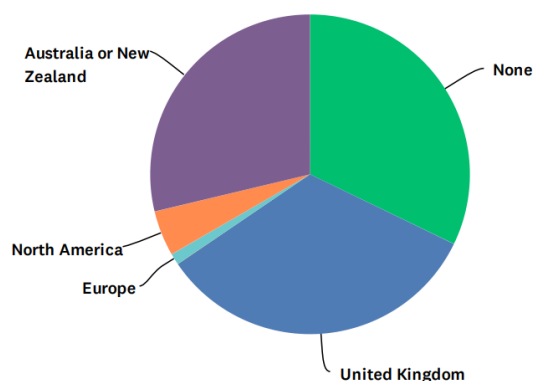
Out of Programme Experience (OOPE) to obtain additional training in vascular surgery remains popular (Q18) with nearly one-half (44.27%) of Consultants obtaining at least 1 years of OOPE, and that remains relatively constant from previous surveys (Survey 2018).

Figure 23. Additional out of programme training in vascular surgery.



Amongst those who availed of OOPE (Q19) training, many obtained that in large specialist centres within the UK (33.33%), others travelled overseas, and for those the most popular destination by far remains Australia and New Zealand (28.74%), with a small number travelling to North America (4.60%), but very few to Europe (1.15%), **Figure 24**.

Figure 24. Where did you obtain your additional specialist vascular surgery training.

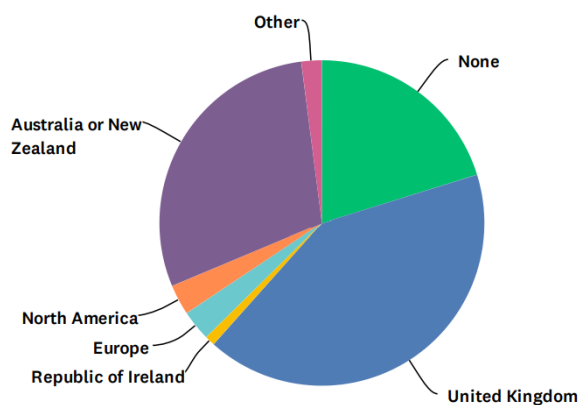


Given the proximity and the knowledge that many excellent training opportunities exist within Europe one must assume the most likely barrier for UK trainees to training in Europe is linguistic.

We also asked if consultant vascular surgeons had completed an endovascular training fellowship (Q20) and found that the likelihood of having had additional endovascular training and the duration of that additional endovascular training has risen again and now accounts for 45.80% (less than 30%, Survey 2018), with most newly appointed consultants (5 years or less), having gained at least 6 and the majority 12 months, or more, additional endovascular training, **Figure 25**.

Progressively more endovascular training has been obtained within the United Kingdom, and from specialist vascular surgeons, as we have developed both capacity for excellence in endovascular practice within the UK and specialist training programmes to support that.

Figure 25. Endovascular Training Fellowships by Location.



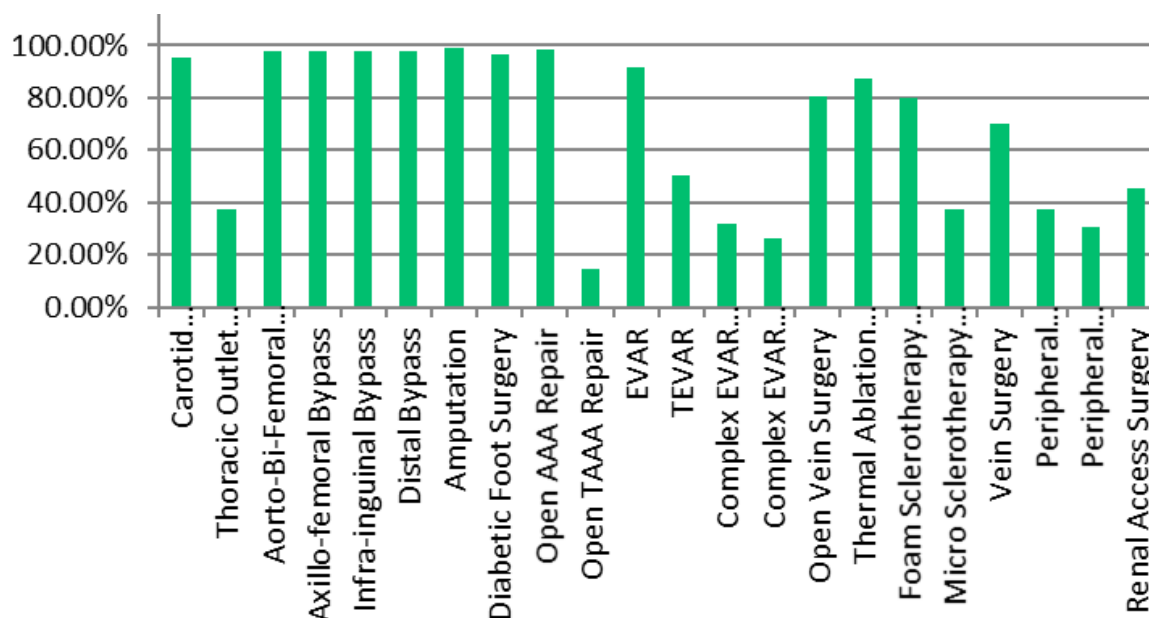
Overseas training particularly in Australia and New Zealand, 28.74%, remains popular, and can bring unique benefits, both in respect to training and also in respect to personal development. However, it is very reassuring that increasing numbers of trainees can obtain the entirety of their training within programme and when they do select OOP they can increasingly access this in specialist centres within the UK.

Consultant Scope of Practice

We asked consultants to describe the scope of their vascular surgery practice (Q52). The vast majority of consultant vascular surgeons perform the major index procedures of Carotid Endarterectomy

(95.49%), Infra-inguinal Bypass (97.74%), Distal Bypass (97.74%), Amputation (99.25%), Open Abdominal Aortic Aneurysm (AAA) Repair (98.50%) and Endovascular AAA Repair (EVAR) (91.73%). Most also perform treatments for Varicose Veins by Vein Surgery (69.92%) and Endovenous Therapy (87.22%), **Figure 26**.

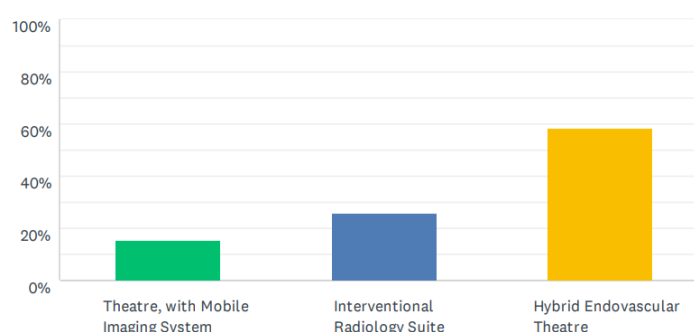
Figure 26. Scope of Operations Performed.



As expected the more complex endovascular procedures are performed by a smaller proportion of vascular surgeons, in order of increasing complexity a decreasing proportion perform Thoracic Endovascular Aortic Aneurysm Repair (TEVAR) (50.38%), Fenestrated EVAR (31.58%) and Branched EVAR (26.32%). With reconfiguration of services and commissioning many of these procedures are concentrated in large tertiary vascular centres and conducted by teams with enhanced endovascular skills and experience.

In the early days of endovascular practice the majority of EVAR and TEVAR were conducted in vascular theatres supported by a mobile Imaging System (C-Arm). We asked consultant vascular surgeons where they now perform the majority of EVAR (Q64). The majority (58.3%) now perform these in a dedicated Hybrid Theatre and only a minority (15.45%) continue to use a Theatre with mobile imaging.

Figure 27. Where do you perform Endovascular Aneurysm Repair.



To improve imaging quality, radiation safety and facilitate more complex endovascular and joint open and endovascular hybrid therapies most large centres have installed hybrid theatres.

Peripheral Endovascular Scope of Practice

We see that the proportion of consultants who perform peripheral angioplasty has progressively increased over the years, we asked surgeons to specify if they perform peripheral endovascular interventions (Q52). In keeping with the evolution of vascular surgery to combine open surgical and endovascular skills, many current surgeons now perform peripheral endovascular intervention in the Iliac (37.59%) and Infra-inguinal (30.83%) arterial beds. Clearly modern Vascular Surgeons in the United Kingdom have now adopted many of the Endovascular Skills required for patient care and come into line with our counterparts in Europe, North America, and the rest of the World.

That trend is reversed for complex open aortic surgery in part due to modern treatment of these conditions often involving complex endovascular intervention for these conditions previously treated by complex open surgery.

The changing pattern can also be seen with Vascular Surgeons performing many endovascular techniques including EVAR, TEVAR, Complex EVAR and Peripheral Endovascular Interventions.

Summary

In general most vascular surgeons continue to deliver a broad vascular surgery practice performing the majority of index procedures such as aneurysm repair, carotid surgery, limb bypass and amputation. They also perform both open and endovascular aneurysm repair and both open and endovenous therapy for varicose veins. There is clear evidence that vascular surgeons have been adopting endovascular and endovenous therapies alongside their established open surgical practice. A large number of newly appointed vascular surgeons also have the skills to perform peripheral angioplasty and complex endovascular aneurysm repair with fenestrated or branched endografts. It is clear that in the United Kingdom the modern vascular surgeon is not only an open surgeon but also an endovascular therapist and that allows vascular surgeons to offer the best option to their patients be it open surgery, endovascular intervention or a combination of hybrid open and endovascular intervention. Within teams there are developing subspecialty interests which should be encouraged. Healthcare planners need to recognise the changing scope of vascular surgery practice both Worldwide and now also in the United Kingdom to ensure suitably skilled vascular surgeons are supported to develop their endovascular practice within the multi-disciplinary team.

2.4 CLINICAL NETWORKS AND HOSPITAL RESOURCES

The survey shows that both nationally and within regions there has been a reconfiguration of vascular surgery services with clinical networks created to manage centralised inpatient arterial hubs supporting a group of spoke hospitals within the region.

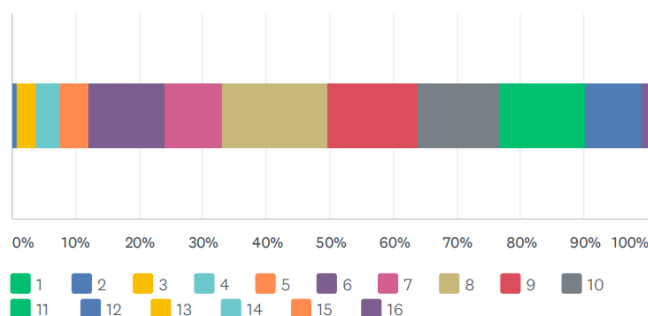
The typical surgeon's week still includes on average 2 outpatient clinics (1 may be a joint clinic with an allied medical specialty) and 2 arterial theatre sessions and 1 day-procedure session which dependant upon skill-set may involve peripheral angioplasty, endovascular or endovenous therapy.

Consultant Teams

Reconfiguration has led to the creation of clinical networks with centralised inpatient arterial Hubs supporting regional Spoke Hospitals. To support 24/7 emergency vascular services and on-call rotas

at the inpatient arterial Hub larger Teams have formed (Q22). The median Team size is now 9 surgeons (Range 2 to 16), up from 7 surgeons (Survey 2018), and the majority work in Teams of 8, or more (66.91%), and the vast majority work in Teams of 6 or more (87.96%). So teams are definitely getting larger, **Figure 28**.

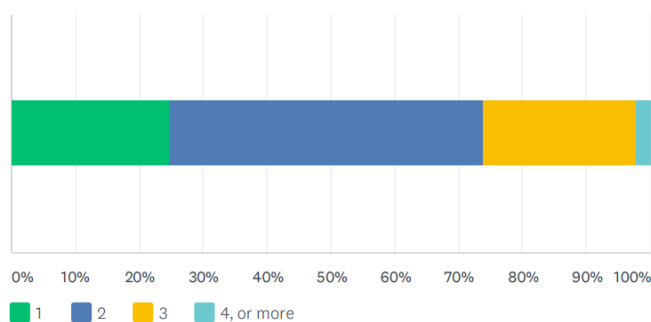
Figure 28. Consultant Team Size.



Vascular Clinical Networks

The reconfiguration of vascular surgery services has seen most regions creating managed vascular clinical networks with a central inpatient arterial hub and a range of spoke hospital services supporting outpatient assessment, diagnostics and day-procedure interventions closer to the patients home. To support this many consultants work across multiple hospital sites as part of their weekly job-plan. We asked consultants in a typical week, in how many hospitals do you work (Q41), **Figure 29**.

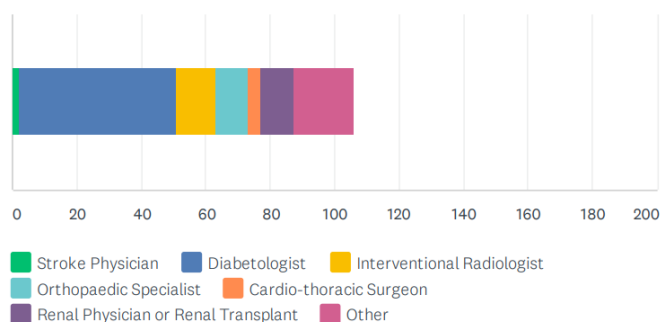
Figure 29. Number of Hospitals in which Consultant Works.



We see that surgeons are most likely to work across 2 sites (49.25%), and that the vast majority (75.37%) are working across 2, or more, sites. The days of single site working would appear to be being consigned to the past. Most believe to create equitable and sustainable teams the demands of multi-site working and travel to spoke sites should be shared across the team members, so one would expect in future the small number (24.63%) of single site workers may reduce further.

Joint Outpatient Clinics

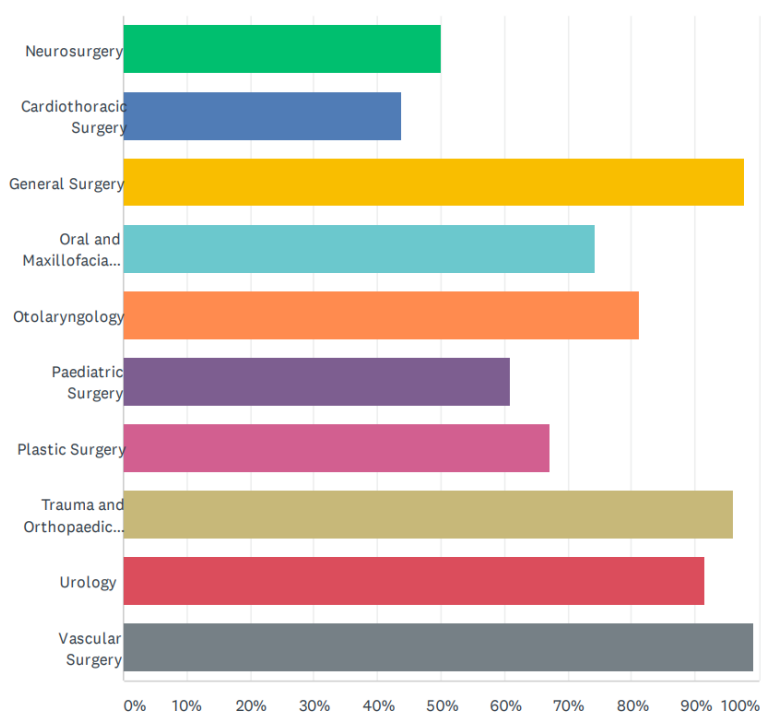
Vascular Surgeons work collaboratively with a number of medical specialties to deliver joint care for patients vascular disease. We asked consultants with which specialties did they conduct joint OPC with other specialties (Q40). The commonest areas in which to have joint outpatient clinics (OPC) are Diabetic Foot Disease (63.64%), Interventional Radiology (15.58%), Renal (12.99%), Orthopaedic (12.99%) and Others (24.68), the majority of which are Podiatrists and Podiatric Surgeons, **Figure 30**.

Figure 30. Joint Vascular Clinics with Other Specialties.

The rising public health concern regarding the rapidly increasing incidence of Diabetes Mellitus, brings with it increasing numbers of Diabetic Foot Complications which often require a Multi-disciplinary Team (MDT) approach with care jointly delivered to reduce the risk of minor or major limb amputation by Diabetologists, Podiatrists, Vascular and Orthopaedic (Foot) Surgeons. The other growing area of practice is that of end stage chronic kidney disease (CKD), due to hypertensive or diabetic complications, where vascular surgeons provide renal access (arterio-venous fistula) surgery.

Centralisation of Vascular Services

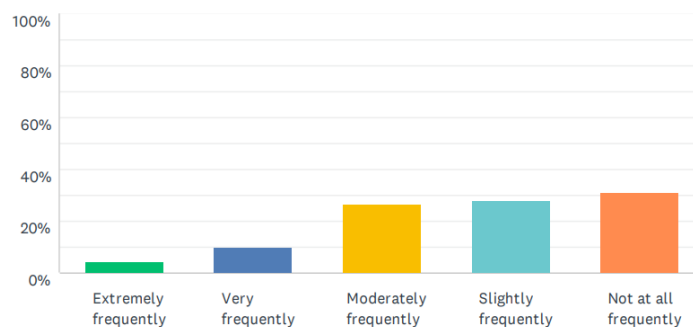
There has been a clear pattern of reconfiguration of inpatient vascular surgery services to central Hubs to support a Clinical Network of Hospitals or a Region and we asked surgeons which major surgical specialties were co-located with them (Q68). Vascular Surgery Units are often co-located with the largest surgical specialties such as General Surgery, Urology and Trauma and Orthopaedics Surgery and to a lesser extent smaller but regional surgical specialties such as Cardiothoracic Surgery, Plastic Surgery and Neurosurgery, **Figure 31**.

Figure 31. Surgical Specialties in your Hospital.

Dual Consultant Operating (Mentoring)

Dual Consultant operating has become a more common phenomenon but does not appear to be based upon inexperience as the frequency is roughly similar across the career stages (Q38), **Figure 32**.

Figure 32. Dual Consultant Operating.



In modern practice over one-in-ten (14.40%) surgeons dual operate very or extremely frequently.

The reconfiguration of vascular surgery services has seen most regions creating managed vascular clinical networks with a central inpatient arterial hub and a network of spoke hospital services.

Summary

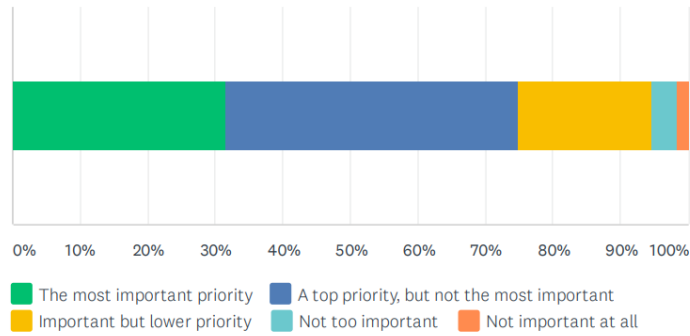
Reconfiguration has seen within regions the creation of clinical networks with inpatient arterial hubs supporting a range of spoke hospitals. This has allowed concentration of both human and environmental resources for the complex needs of these inpatients. Larger teams have been created to cover the emergency on-call and emergency surgeon of the week duties in the central arterial hub and allow surgeons not rostered for emergencies that week to travel to spoke hospitals to conduct outpatient clinics and day-procedures.

2.5 HEALTH AND WELLBEING

The survey reveals the pattern of health and wellbeing within the vascular surgery community in the United Kingdom and Ireland.

We asked consultants how much of a priority was work-life balance (Q86), and nearly three-quarters (74.81%) considered it a top priority (43.31%) or the most important priority (31.50%), **Figure 33**.

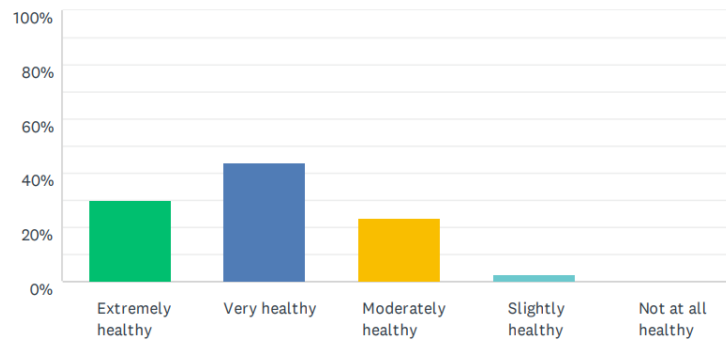
Figure 33. How important is work-life balance.



Health at Work

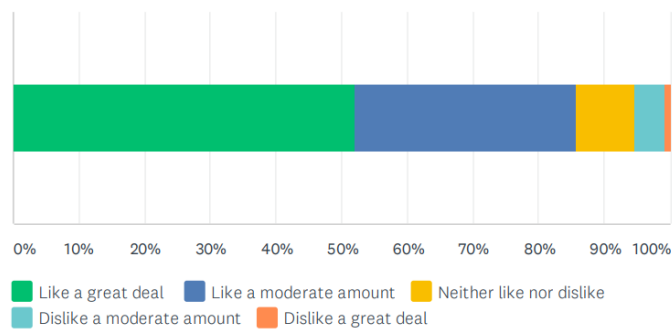
We asked consultants how healthy they were (Q80). All consultants thought they were either slightly, moderately, very or extremely healthy, with none declaring they were not at all healthy, **Figure 34**.

Figure 34. Physical Health.



We asked whether consultants liked their job (Q81), and again the majority reported they were either liked a great deal (51.97%) or moderate amount (33.86%), **Figure 35**.

Figure 35. Do you like your job.



Wellbeing at Work

Copenhagen Burnout Inventory

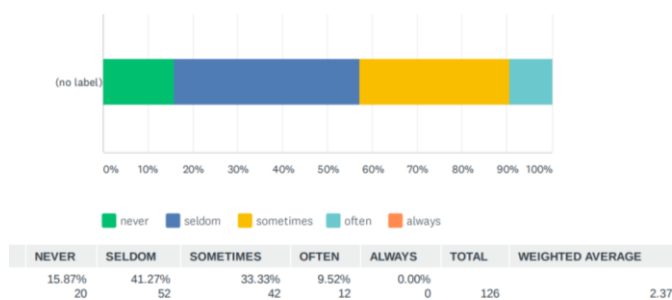
The Copenhagen Burnout Inventory (CBI) measures personal burnout. The CBI was originally used in the human services sector with multiple professions, but it is now considered a validated and accepted

measure across healthcare professionals. These have yielded consistent, valid, and reliable results measuring burnout, **Figure 36**.

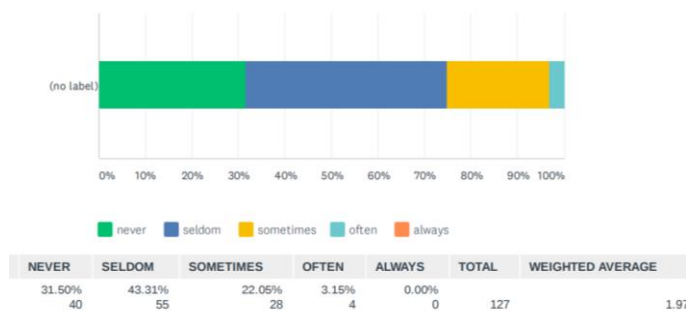
Figure 36. Copenhagen Burnout Inventory in Vascular Surgeons.



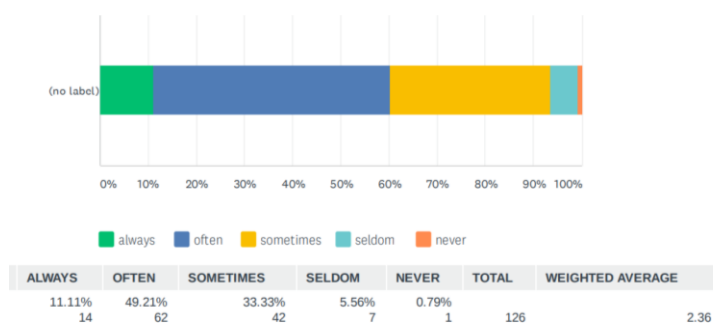
Are you exhausted in the morning at the thought of another day at work?



Do you feel every working hour is tiring for you?



Do you have enough energy for family and friends during leisure time?



Those self-reported rates are too high for a healthy workforce and the factors causing that need further interrogation to maintain the safety of our workforce and our patients. Further research is required by occupational health.

This is the first large-scale study to consider self-reported Burnout in Vascular Surgeons.

Brief Resilience Scale

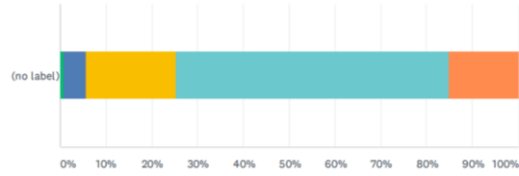
Brief Resilience Scale (BRS)

Brief Resilience Scale (BRS) a six items short scale to measure resilience. The Brief-Resilience Scale intends to measure one's ability to bounce back or recover from stress. According to Smith et al. (2008), these notions of 'bouncing back' and recovering from stress are closest to the original meaning of resilience. It has been shown to have discriminatory validity in frontline doctors, **Figure 37**.

Figure 37. Brief Resilience Scale in Vascular Surgeons.

Brief Resilience Scale

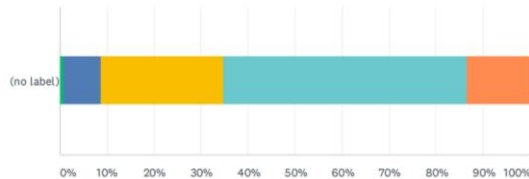
I tend to bounce back quickly after hard times



STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
0.79%	4.76%	19.84%	59.52%	15.08%	126	3.83
1	6	25	75	19		



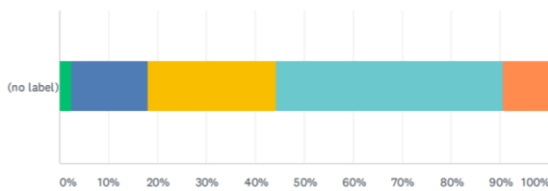
I have a hard time making it through stressful events



STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE	TOTAL	WEIGHTED AVERAGE
0.79%	7.87%	25.98%	51.97%	13.39%	127	3.69
1	10	33	66	17		



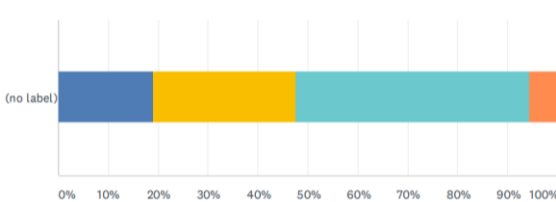
It does not take me long to recover from a stressful event



STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
2.36%	15.75%	25.98%	46.46%	9.45%	127	3.45
3	20	33	59	12		



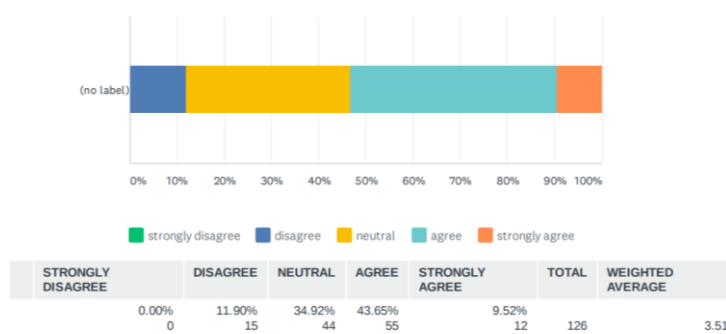
It is hard for me to snap back when something bad happens



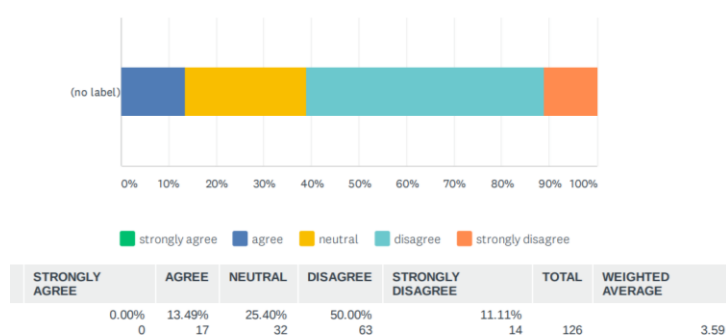
STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE	TOTAL	WEIGHTED AVERAGE
0.00%	19.05%	28.57%	46.83%	5.56%	126	3.39
0	24	36	59	7		



I usually come through difficult times with little trouble



I tend to take a long time to get over set-backs in my life

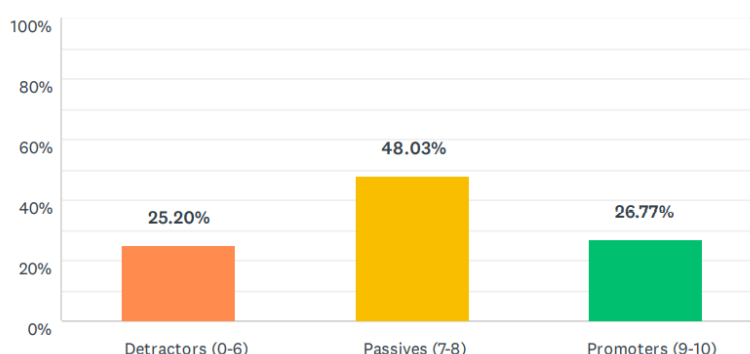


Fortunately, we appear to be quite resilient group, which confers some protect against occupational stress and reduces the risk of burnout. However, even the most resilient groups have limits beyond which their capacity to cope is diminished.

This is the first large scale study of resilience in our vascular surgeons using the BRS.

Perhaps one of the most telling questions for any professional is that of would you recommend vascular surgery as a career to a friend or colleague (Q100), **Figure 38**.

Figure 38. Would you recommend vascular surgery as a career.



DETRACTORS (0-6)	PASSIVES (7-8)	PROMOTERS (9-10)	NET PROMOTER® SCORE
25.20%	48.03%	26.77%	2
32	61	34	

The results with roughly equal numbers of detractors (25.20%) and promotors (26.77%) and a large group of passives (48.03%), and a net promotor score of 2 is not particularly encouraging. Suggesting many vascular surgeons consider the career more arduous than rewarding.

Belonging and Diversity

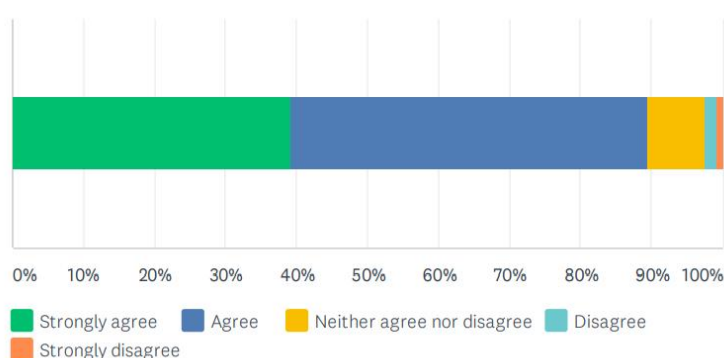
We sought to determine whether vascular surgeons felt they belonged in their places of work and within the vascular surgery community.

We asked Consultants if they felt like they belonged at their hospital (Q109), and the majority (72%) either Agree (44.00%) or Strongly Agree (28.00%).

We also considered whether Consultants felt respected and valued by their teammates at their hospital (Q113) and the vast majority (87.20%) Agreed.

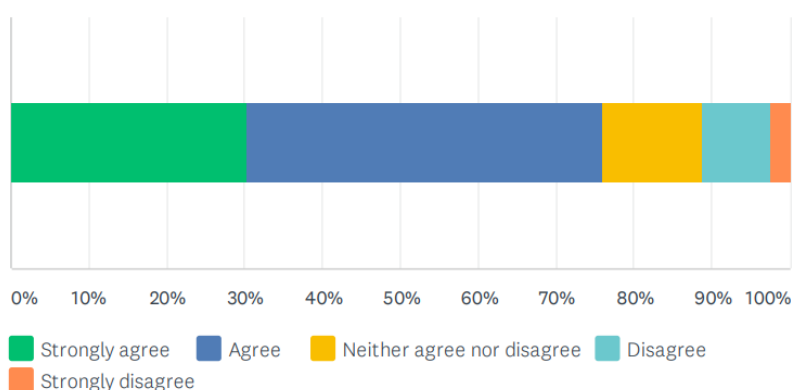
We also asked if they felt respected and valued by their multi-disciplinary colleagues at their hospital and again the vast majority (89.60%) either Agree (50.40%) or Strongly Agree (39.20%), **Figure 39**.

Figure 39. Feeling respected and valued by colleagues.



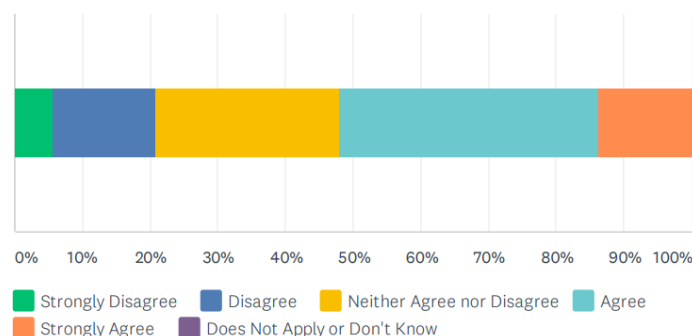
Importantly they also felt able to voice a contrary opinion without fear of negative consequences (Q112), with the majority Agreeing (76.00%), but concerningly a significant minority Disagree (8.870%) or Strongly Disagree (2.40%), **Figure 40**.

Figure 40. I can voice a contrary opinion without fear.



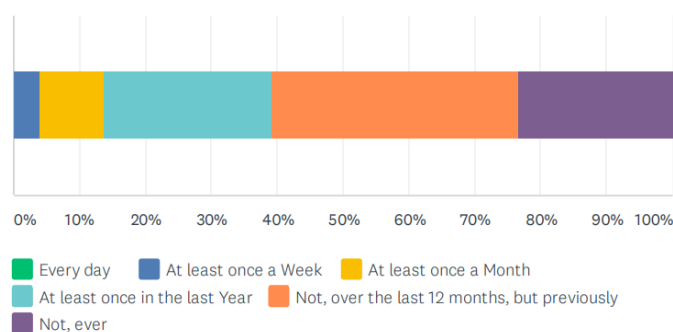
It is important that members feel confident to raise concerns, through the appropriate channels, without fear of negative consequences. We also considered whether Consultants felt staff were treated fairly when they made mistakes (Q114), and whilst a slim majority agreed (52.00%), of concern one-fifth (20.80%) disagreed, **Figure 41**.

Figure 41. Are staff treated fairly when they make mistakes.



We are all aware of the numerous reports of increasing rates of verbal and physical abuse against staff on the workplace and the damaging effects negative workplace environments have on staff health and patient safety. We asked consultant whether they had personally experienced harassment, bullying/undermining or abuse at work, or related to work, over the last 12 months (Q115). When asked about their experience of harassment, bullying or abuse only a minority (23.20%) have never experienced it, and concerningly over one-third of staff have experienced it at least once in the last year (25.40%), at least once in the last month (9.60%) and very concerningly several reporting they experienced it at least once a week (4.00%), **Figure 42**.

Figure 42. Experience of harassment, bullying and abuse at work.



The minimum requirement for any employer is to ensure the safety of its workforce, clearly within the Health Service this is not currently being achieved, and needs much more work to create a safe environment for staff and patients.

Workplace harassment, bullying and abuse is unacceptable and addressing it, and the factors underlying it, must be a major focus for the Health Service

Diversity

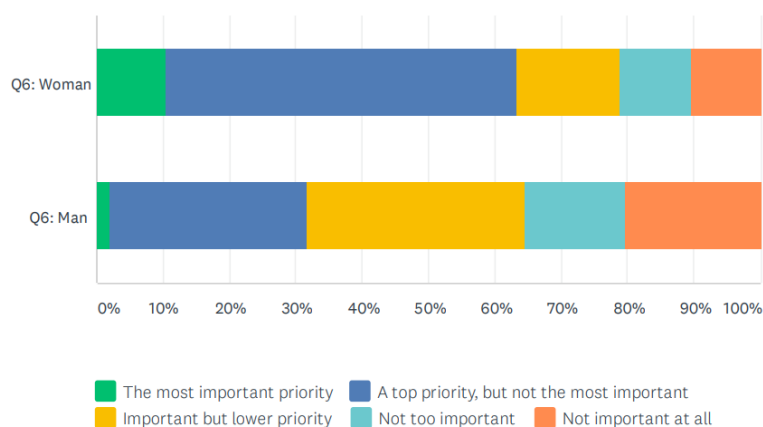
The professions, including vascular surgery, should reflect the populations and society they care for and represent. The Vascular Society, perhaps more than any other surgical specialty, recognised the legacy issues in respect to diversity amongst surgeons across these Islands. It has actively engaged in a multi-faceted approach to encourage diversity, in all its forms, and at all levels of our profession. However, change takes time and much more needs done.

Diversity of Gender

We asked Consultants how much of a priority gender diversity was to them (Q101) and found that more than one-third (36.29%) considered it either a top priority or the most important priority.

Perhaps understandably as the minority but growing proportion of our specialty, amongst surgeons who identify as women that proportion increases to over two-thirds, **Figure 43**.

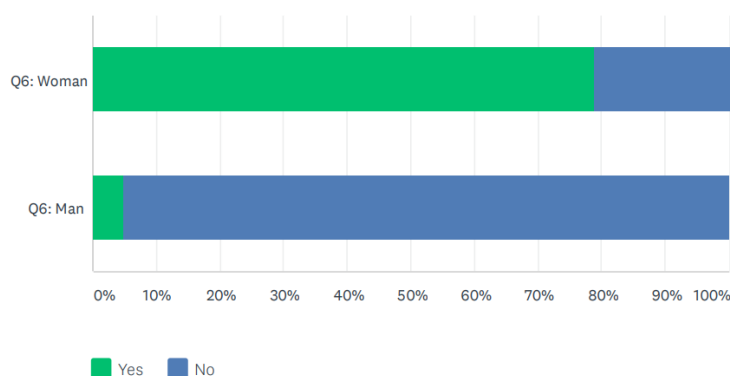
Figure 43. How much of a priority is gender diversity by gender identity.



It is reassuring that members who identify as man and woman similarly consider gender diversity is also important to the Vascular Society (Q102), with almost four-fifths considering the Society sees it as an important priority, a top priority or the most important priority.

To explore the potential barriers to career progression we also asked if Consultants felt gender had played a role in missing out on a raise, promotion, key assignment, or chance of getting ahead (Q103). Here gender has clearly played a significant role, with nearly four-fifths of women agreeing compared to a very small minority of men, **Figure 44**.

Figure 44. Missing out on a raise, promotion, key assignment or chance because of gender.



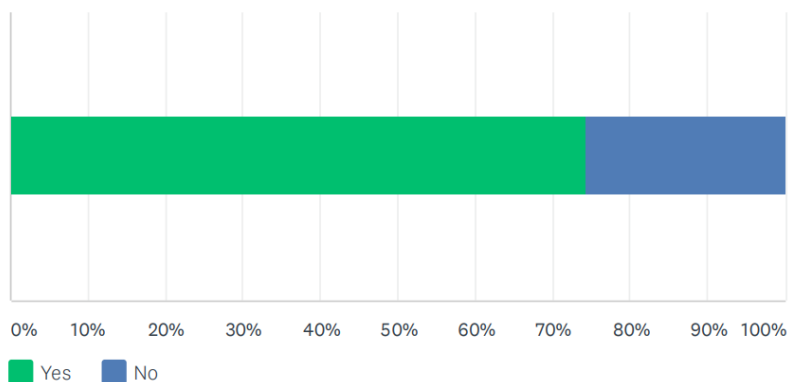
Diversity of Ethnicity and Culture

We asked Consultants how much of a priority ethnic and cultural diversity was to them (Q104) and found that almost one-half (46.78%) considered it either a top priority or the most important priority. It is reassuring that members also consider ethnic and cultural diversity is important to the Vascular Society (Q105), with over four-fifths considering the Society sees it as an important priority, a top priority or the most important priority. It is also reassuring that this level of agreement is consistent across those who identify from white and non-white (Asian, Black, Arab and Other) backgrounds.

To explore the potential barriers to career progression we also asked if Consultants felt ethnicity or cultural background played a role in missing out on a raise, promotion, key assignment, or chance of

getting ahead (Q106). Here ethnicity and cultural background has clearly played a significant role, with nearly three-quarters members who identify from white and non-white (Asian, Black, Arab and Other) backgrounds having such experience, **Figure 44**.

Figure 44. Missing out on a raise, promotion, key assignment or chance because of ethnicity or cultural background.



We did not detect any significant difference in the experience of harassment, bullying or abuse at work between different ethnicity and cultural backgrounds in this survey.

We are aware that there are several Consultant Vascular Surgeons who continue to practice with a registered Disability, but in this survey we did not have a response from a Surgeon who identified as a person living with a disability (Q107). This is an important area for future research.

Summary

In several countries concerns have been raised about burn-out rates amongst surgeons exposed to busy and stressful jobs which detrimentally affect work-life balance. These effects are perhaps most acutely felt in rapidly evolving specialties like vascular surgery where in addition to the workload surgeons are continually having to adapt to new techniques. Diversity is a key priority for the Vascular Society and its' membership and we shall continue to strive towards an inclusive future for our members.

The Vascular Society

We asked as part of this survey some questions to determine how our membership perceive the Vascular Society.

We asked members how much trust they had in the recommendations of the Vascular Society (Q117) and are delighted that the level of trust is very high, with the vast majority (93.60%) trusting the Societies recommendations, with levels of trust being a moderate amount (28.00%), a lot (37.60%) and a great deal (28.00%).

Given our role as advocate for our members, vascular surgeons and our vascular services we also asked members how much they trust the vascular society to act in their interests (Q118). Here again a large majority (87.20%) trust the Society to act in their interests, but a small minority (4.00%) and we all need to work harder to ensure all members and indeed all vascular surgeons have a voice. We also invited anonymous free-text feedback from our membership as part of the survey and these comments are included verbatim in **Appendix 2**. All feedback, even the small number of negative

comments received, are welcome and they shall both inform and inform future policy direction by the leadership of the Vascular Society.

CONCLUSIONS

Vascular Disease is a growing cause of morbidity and mortality globally and in the United Kingdom. The number of consultant vascular surgeons in the United Kingdom is lower than other comparator countries in Europe, Austral-Asia and North America and should be at least 1 per 100 thousand of population. The current number of training positions in vascular surgery in the United Kingdom is well below the preferred ratio of 0.4 and is insufficient to maintain or expand vascular surgery services in the face of increasing demand. We have demonstrated high rates of burnout (by CBI) amongst vascular surgeons in the United Kingdom and this is mirrored in several countries where concerns have been raised about burn-out rates amongst surgeons exposed to busy and stressful jobs which detrimentally affect work-life balance. These effects are perhaps most acutely felt in rapidly evolving specialties like vascular surgery where in addition to the workload surgeons are continually having to adapt to new techniques. Vascular surgery is mentally and physically demanding and to protect surgeon wellbeing and patient safety significant consideration should be given to emergency overnight on-call for surgeons being reduced above 55 years of age and removed above 60 years of age.

Hiring more staff is one option, another is changing how we practice to better use our limited resources. Vascular Surgeons do not work in isolation but as part of a multi-disciplinary team delivering vascular care alongside their colleagues from vascular physicians, vascular nurse specialists, vascular technologists, vascular anaesthetists and radiologists. The vascular surgeons should be used effectively by optimising the time they spend in the operating theatre or endovascular suite using the specialists skills they have trained for many years to acquire. The significant proportion of the vascular workload that does not involve procedural intervention may be more efficiently conducted by other team members using their respective skills in assessment, diagnostics, counselling, risk-factor management and best medical therapy. The specialist team at the Hub can effectively communicate with primary care and spoke hospitals use of modern technology utilising effective diagnostic algorithms, digital image transfer and telemedicine. Effective triage should ensure we only need to see patients with proven vascular disease who would benefit from treatment from a specialist vascular surgeon. Vascular nurse specialists often working in conjunction with vascular technologists have proven they can effectively manage the majority of vascular referrals ensuring appropriate assessment and treatment advice for those not requiring intervention and escalating referrals which may require intervention to further assessment by a vascular surgeon. Specialist clinics with clear clinical pathways have been effectively run by vascular nurse specialists for Claudication, Varicose Veins and Small Aneurysm. If intervention may be required a risk-benefit analysis must be considered and for that vascular nurse specialists in conjunction with vascular physicians and vascular anaesthetists may conduct pre-assessment clinics, medical optimisation and even consider frailty and turn-down for active treatment decisions. The vascular surgeons should really only become involved if intervention may be required and the diagnostic information is available to make an informed decision with the patient whether to intervene or not.

Whilst Worldwide Vascular Surgeons have evolved to combine new endovascular skills with their established open surgery skills, and that process which started later and has progressed more slowly in the United Kingdom is slowly gaining momentum. It is somewhat strange that in a public Healthcare system such as the NHS where doctors' pay is not linked to procedural numbers that such resistance to

change has been noted between the two major Endovascular practitioners in Vascular Surgery and Radiology. It is clear that surgeons should clearly lead on open surgery and hybrid procedures in which open access is an essential component of the overall combined open and endovascular procedure. So too percutaneous procedures can be conducted without need for a theatre environment and can be conducted by suitably qualified physicians from a vascular surgery or radiology background. Rather than turf-wars, keeping the patient at the centre to ensure they are treated in a timely and skilled manner by the most appropriate team member, should help build trust and build cohesive functioning teams. Vascular surgeons and radiologist should not be competing for the same patient but rather treat the patient with the best treatment option, be it open or hybrid or endovascular, and by the most appropriate team.

Vascular Disease is finally getting the attention it deserves and we should create effective vascular networks which by combining the skills of the team create synergy and good teamwork for the benefit of the patients. Building strength through respect and equality for the different but complimentary skills of all team members to include nurses, physicians, radiologists and vascular surgeons.

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Appendix 1. Vascular Surgery United Kingdom Workforce 2021 Survey Questions

Data Consent

1. Electronic Consent: Please select your choice below.
2. What is your anonymous code?

Personal Characteristics

3. What is the job title for your current position?
4. What is your age?
5. What is your age range?
6. What is your gender identity?
7. Which race/ethnicity best describes you?
8. Where you born outside of the United Kingdom and Ireland?
9. Where did you go to Medical School?
10. In which postgraduate medical education deanery in the United Kingdom or Ireland was the majority of your vascular surgery training?
11. In which postgraduate medical education deanery of the United Kingdom or Ireland do you work?
12. In which hospital do you carry out the majority of your inpatient arterial work?
13. If you are now a substantive consultant, did you work as a locum consultant prior to substantive appointment?

Job Characteristics

14. Which of the following best describes your job function?
15. How long have you been in your current position?
16. What percentage of your job involves vascular surgery?
17. During specialist registrar training how long did you spend in recognised specialist vascular training unit?
18. Did you receive Out of Programme Experience (OOPE) in Vascular Surgery?
19. If you obtained Out of Programme Experience (OOPE), where did you train?
20. Did you completed an Endovascular Training Fellowship (please specify)?
21. If you obtained Endovascular Training, where did you train?
22. How many consultant vascular surgeons (body count) are there in your Hospital?
23. How many consultant vascular surgeons (whole time equivalents) are there in your hospital?
24. How many UNFILLED consultant vascular surgeon posts are there in your hospital?
25. If you have unfilled posts, please state reason post is unfilled?
26. Is your job full-time or part-time?
27. Did you reduce your TOTAL Pas in the last 12 months?
28. In your job-plan how many TOTAL programmed activities (PA)?
29. In your job-plan how many programmed activities (PA) involve direct clinical care (DCC)?
30. In your job-plan how many programmed activities (PA) are for supporting professional activities (SPA)?
31. In your job-plan how many programmed activities (PA) are for Additional Responsibility Allowance (ARA) for senior management/educational roles?
32. Do you have a clinical excellence award (CEA), please specify?

33. What is the average number of hours you work per week?
34. In a typical week, how many Theatre Sessions (Major Ops) do you have?
35. In a typical week, how many Day Procedure Sessions (Minor Ops) do you have?
36. In a typical week, how many Endovascular/Angio Sessions do you have?
37. To maintain your surgical skills how many surgery sessions per week would be optimal?
38. In the past 12 months, how frequently did you operate with a second consultant?
39. In a typical week, how many Outpatient Clinics do you have?
40. What joint outpatient clinics with other specialists do you do? (Select all that apply)
41. In a typical week, in how many hospitals do you work?
42. Does your hospital provide 24/7 cover for Vascular Surgery?
43. What is your oncall committment?
44. What type of surgery do you cover when oncall for emergencies?
45. When oncall are you free from daytime elective committments?
46. How many hospitals do you cover when oncall?
47. Do you allow surgeons to leave the oncall rota at a certain age, if so please specify?
48. Above what age do you feel it would be inappropriate to be oncall for vascular surgery emergencies?
49. Do you do scheduled theatre sessions at weekends?
50. Would you do scheduled theatre sessions at weekends, if it were appropriately jobplanned?
51. Have you already left the oncall rota, please select most appropriate answer?

Vascular Surgery Practice

52. Which of these operations do you perform (Select all that apply)?

Hospital Resources

53. Do you have specialist vascular surgery beds?
54. How many specialist vascular surgical beds do you have in your hospital?
55. How many specialist vascular surgical beds do you have per consultant in your hospital?
56. Does your hospital have a Level 1 Trauma Centre?
57. Does your hospital have 24/7 Emergency Department?
58. Do you have access 24/7 to an Intensive Care Unit?
59. Do you have access to a 24/7 CEPOD Emergency Theatre in your hospital?
60. Do you have access to 24/7 Hybrid Interventional Suite with fixed imaging equipment?
61. Do you have access to 24/7 Vascular Imaging (CTA or MRA) in your hospital?
62. Do you have access (daytime, monday to friday) to a vascular laboratory for vascular ultrasound imaging?
63. Do you have access (out of hours, weekend) to a vascular laboratory for vascular ultrasound imaging?
64. If you do EVAR, where do you perform the majority of your cases?
65. Do you have access to 24/7 Interventional Radiology cover in your hospital?
66. How many Interventional Radiologist are in your hospital?
67. Is your hospital a National AAA Screening Programme recognised treatment centre?
68. Which surgical specialties do you have in your hospital? (Select all that apply)

Professional Activities

69. What is your job role?
70. What educational or professional roles have you held?
71. What roles do you have as an Examiner?
72. What is the most senior official academic appointment you have held, please specify?
73. Do you attend a weekly Multi-disciplinary Team Meeting?
74. Do you attend a monthly audit meeting to included Morbidity and Mortality data?
75. Do you submit your outcomes data to the National Vascular Registry (NVR)?
76. Do you have administrative support for NVR data entry?
77. Has your hospital been approved by the GMC and Vascular Surgery SAC for new Specialist Registrar Training in Vascular Surgery?
78. Do your surgical trainees receive training on procedural skills simulators (arterial/venous/endovascular) before treating patients?
79. Have you attended a national vascular conference (VS, ESVS or equivalent) as part of approved study leave for continued professional development in the last 12 months?

Work-life Balance and Wellbeing

80. How physically healthy are you?
81. Do you like your job, neither like nor dislike it, or dislike it?
82. Do you have a mentor?
83. How likely are you to drop your vascular surgery commitments and continue as a general surgeon?
84. If you plan to retire in the next 10 years, please indicate how soon you plan to retire?
85. If you plan to retire, please state your reason for leaving?
86. How much of a priority is work-life balance to you, yourself?
87. Is your work emotionally exhausting?
88. Do you feel burnt out because of your work?
89. Does your work frustrate you?
90. Do you feel worn out at the end of working day?
91. Are you exhausted in the morning at the thought of another day at work?
92. Do you feel that every working hour is tiring for you?
93. Do you have enough energy for family and friends during leisure time?
94. I tend to bounce back quickly after hard times.
95. I have a hard time making it through stressful events.
96. It does not take me long to recover from a stressful event.
97. It is hard for me to snap back when something bad happens.
98. I usually come through difficult times with little trouble.
99. I tend to take a long time to get over set-backs in my life.
100. How likely is it that you would recommend vascular surgery as a career to a friend or colleague?

Inclusion and Belonging

101. How much of a priority is gender diversity to you, yourself?
102. How much of a priority is gender diversity to the Vascular Society, in your opinion?
103. Have you ever felt that your gender has played a role in your missing out on a raise, promotion, key assignment, or chance to get ahead?
104. How much of a priority is ethnic and cultural diversity for you, yourself?
105. How much of a priority is ethnic and cultural diversity to the Vascular Society, in your opinion?
106. Have you ever felt that your ethnicity or cultural background has played a role in your missing out on a raise, promotion, key assignment, or chance to get ahead?
107. Are you a person living with a disability?
108. When I speak up at work, my opinion is valued.
109. I feel like I belong at my hospital.
110. Promotion decisions are fair at my hospital.
111. I feel respected and valued by my Multi-Disciplinary Colleagues at my hospital.
112. I can voice a contrary opinion without fear of negative consequences.
113. I feel respected and valued by my teammates at hospital.
114. Staff are treated fairly when they make mistakes
115. Have you experienced harassment, bullying/undermining or abuse (verbal or physical) at work, or related to your work, over the last 12 months?

The Vascular Society and our workforce survey

116. Please indicate whether you are a member of any of the following Vascular Societies, or none?
117. How much do you trust the recommendations of the vascular society?
118. How much do you trust the vascular society to act in your best interest?
119. How useful is this survey?
120. Do you have any other comments, questions, or concerns?

Copenhagen Burnout Inventory
Brief Resilience Scale

Appendix 2. Members Survey comments, questions and concerns.

- There seem to be too much emphasis on workforce rather than wellbeing in this survey. Also not clear what plans vascular society has enquiring about wellbeing. Sounds like a tick box exercise.
- VS should be the 'go to place's for UK vascular surgeons. Its response in speaking up for vascular surgery has been unheard. Needs to raise awareness to gen public of what vascular conditions are.
- It will be very easy from the answers to identify people regardless of anonymity so that is tricky. Also Deep Venous (as it will be clear who I am) is not represented in the list of procedures fully. May be minimal now but is growing. Would also be helpful to include a question as to why multiple consultant operating is necessary.
- The Vascular Society can behave like an old boys club with council members preserving their own interests and doing favours for mates rather than acting in the wider interests of patients and services
- I have left the VS as the committee is not representative of the ethnicity and sex of Vascular surgeons - it's a bit of a public school old boys club! I would rather stay at home with the family and work with my diverse colleague than be a minority!
- Locally, we feel our views are not represented by the VS. This was particularly clear with the recent debacle over the NICE guidelines for EVAR, which in their draft form reflected our views. For the VS to take a contrary view, wasn't a surprise, but increased our feeling of being disenfranchised. I suspect there's a large, quiet minority feeling similarly, but who won't stand up at the ASM and vocalise this.
- I think that my answers to the questions on burnout, wellbeing and interdepartmental relationships partly reflect the difficulties that the last 12 months has brought to the system as a whole rather than the usual culture of the unit. Feelings of lack of inclusion reflect the stresses on all team members. We have also been more short staffed until today, when we appointed a 6th WTE consultant.
- There is about to be a Consultant workforce crisis.
- VS still an Old Boys club to a certain degree, lacking impartiality in some reviews conducted of hub/spoke arrangements.
- It depend what is done with the survey.

- I answered that I do not feel gender and ethnic diversity is important as I really don't care what race, ethnicity, gender identification or indeed any other characteristic is as long as they are competent and professional people and I would not/will not/do not discriminate. People are people irrespective of their characteristics. As such those two questions can create misleading responses.
- As retired some of the responses are based on my experience beforehand but the way the questions are structured it is not possible to make this clear.
- As a member of the SVS, I find that I look at their website & resources more than that of the VS (GBI). Mainly due to the fact that the VS is navel gazing a lot of the time. Sorry for the very blunt critique but I hope it helps.
- All Vascular Surgeons should be members of the VS.
- If you're including practising surgeons like me who are retired from the NHS you should filter your questions appropriately.
- In terms of retirement age and ability to do the job I feel that setting up a sustainable job plan and team working pattern is essential to ensure those over 60 can still contribute.
- Clinical productivity is falling because of extra "admin" and the removal of support staff meaning we have to do more ourselves.
- If sufficient individuals complete the survey to make it relevant then could an anonymized summary of the results be published / made available as it would be useful to compare our department to the national average as well as other units of a similar size in future negotiations with management for resources for our network.
- Answers refer to when in main NHS post from which I retired at end 2017.
- To convey results at every level.