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Matter for debate

Predicted shortage of vascular surgeons in the United Kingdom: A matter for debate?[☆]

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ABSTRACT

Background: Vascular surgery became a new independent surgical specialty in the United Kingdom (UK) in 2013. In this matter for debate we discuss the question, is there a “shortage of vascular surgeons in the United Kingdom?”

Materials and methods: We used data derived from the “Vascular Surgery United Kingdom Workforce Survey 2014”, NHS Employers Electronic Staff Records (ESR), and the National Vascular Registry (NVR) surgeon-level public report to estimate current and predict future workforce requirements.

Results: We estimate there are approximately 458 Consultant Vascular Surgeons for the current UK population of 63 million, or 1 per 137,000 population. In several UK Regions there are a large number of relatively small teams (3 or less) of vascular surgeons working in separate NHS Trusts in close geographical proximity. In developed countries, both the number and complexity of vascular surgery procedures (open and endovascular) per capita population is increasing, and concerns have been raised that demand cannot be met without a significant expansion in numbers of vascular surgeons. Additional workforce demand arises from the impact of population growth and changes in surgical work-patterns with respect to gender, working-life-balance and 7-day services.

Conclusions: We predict a future shortage of Consultant Vascular Surgeons in the UK and recommend an increase in training numbers and an expansion in the UK Consultant Vascular Surgeon workforce to accommodate population growth, facilitate changes in work-patterns and to create safe sustainable services.

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Introduction

Vascular Surgery became a new independent surgical specialty in the United Kingdom (UK) in 2013.¹ In many European countries vascular surgery has been an independent specialty for several years.² Vascular Surgeons manage a vast array of conditions affecting the body's vascular system, including the arteries, veins, and lymphatics. In developed countries, both the number and complexity of vascular surgery procedures per capita population is increasing,^{3,5} and concerns have been raised in the United States,^{6,7} France,⁸ and the UK^{9,10} that this demand cannot be met without a significant expansion in numbers of vascular surgeons.

We have recently characterized the current Consultant Vascular Surgery workforce in the UK.¹¹ Here we describe the current and predict the future Consultant Vascular Surgeon workforce needed across the UK. We anticipate that these data will provide valuable information for Vascular Surgery workforce planning in the UK, and perhaps in Europe and similar healthcare systems abroad.

Estimation of Vascular Surgeon Workforce in UK

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) 2014¹¹, National Health Service (NHS) Employers Electronic Staff Records (ESR), and the National Vascular Registry (NVR) surgeon-level public report.¹² The VSUKWS 2014¹¹, reported the views of 352 Consultant Vascular Surgeons, practicing in the UK. NHS Electronic Staff Records (ESR) represents an employer record of the physician workforce in the UK. The National Vascular Registry (NVR),¹² records and reports on outcome activity data for vascular surgeons practicing in the UK (a legal requirement in England).

VSUKWS 2014¹¹, surveyed 450 Members of the Vascular Society GB&I (VSGBI) based within the UK, and received 352 surveys (78% response rate) completed by Consultant Vascular Surgeons currently practicing in 95 NHS Hospital Trusts covering every Postgraduate Medical Training region in the UK (England, Scotland, Wales, and Northern Ireland). Respondents described themselves as Vascular Surgeons: none identified themselves as a General Surgeon. However, not all practicing Vascular Surgeons in the UK are members of the VSGBI. Therefore, other sources of information were considered.

The National Health Service (NHS) collates data on consultant workforce primarily from Electronic Staff Records (ESR). Unfortunately, as a new specialty there is no historical data for Vascular Surgery, as previously a sub-specialty of General Surgery (pre-2013) even specialist Vascular Surgeons would have been 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) "2013 Report on Surgical Outcomes Consultant-level Statistics"¹² records that 458 surgeons in UK were conducting Abdominal Aortic Aneurysm (AAA) repair. With a UK population circa 63 million, this suggests that currently the ratio of vascular surgeons to capita population is 1 per 137,000. 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.¹⁰ 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 un-selected 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 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 mid-2010 to be as follows: Scotland, 5.3 million; Wales, 3 million; Northern Ireland, 1.8 million; England, 52.6 million.¹³ 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: 1 per 150,000 as VSGBI (minimum number)¹⁰; 1 per 137,000 as number registered by NVR (surgeons conducting AAA repair); 1 per 100,000 as VSGBI (number for tertiary centres).¹⁰ Suggesting, in the UK we need between 418 and 627 Vascular Surgeons, [Table 1](#).

Analysis of Regional Distribution of vascular surgeons in UK

The NVR¹² records 111 NHS Trusts in the UK as registered to perform major vascular surgery (Aneurysm Repair or AAA). As expected the greatest numbers are seen in London, the West Midlands, and the North West. There is significant variation between regions in the number of NHS Trusts with registered vascular surgeons, [Fig. 1](#). From our analysis there is significant regional variation in the distribution of inpatient vascular services across the UK. In part this variation can be explained by population density. Based on available data, if we accept the VSGBI minimum numbers to deliver a safe service, there would appear to be significant under-provision of Consultant Vascular Surgeons in the UK, and this is most acute in Scotland, Wales, and Northern Ireland.

It is also clear that in some regions there are a large number of relatively small teams (3 or less) of vascular surgeons working in separate NHS Trusts in quite close geographical proximity to each other, [Figs. 1 and 2](#). This is most acute in the East of England, North West, South Central, South West, and all of the home-nations (Scotland, Wales, and Northern

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