Introduction

Vascular disease is now the commonest cause of death worldwide having overtaken infectious disease and cancer some years ago.

In developed (and developing) countries most vascular disease is caused by atherosclerosis (a.k.a. hardening of the arteries) and is primarily the result of smoking, diabetes, hypercholesterolaemia, hypertension, obesity and poor diet, lack of exercise, and excessive alcohol consumption. The prevalence of atherosclerosis also increases exponentially with age.

It is widely agreed that the most clinically and cost-effective way of reducing the burden of vascular disease is through better public health, tackling those risk factors which are amenable to lifestyle modification (e.g. smoking, obesity, poor diet, exercise) and providing medical therapy (e.g. antiplatelet agents, drugs for hypercholesterolaemia and diabetes, supervised exercise programs).

Unfortunately, many patients are unable to comply fully with such lifestyle advice and medical treatment. Even those that do comply occasionally develop life and limb threatening complications.

Although legislation has had a significant impact upon tobacco consumption in the UK, the prevalence of diabetes, obesity, and alcohol abuse continues to rise; and there is a little we can do about getting older!

As such, significant numbers of people with arterial disease require interventional treatment either by means of conventional vascular surgery (e.g. bypass grafts) or so-called endovascular treatments (e.g. angioplasty, stenting).

The burden of venous disease (varicose veins, chronic venous insufficiency, deep vein thrombosis [DVT], pulmonary embolism [PE], and chronic leg ulcers) also continues to grow due to the ageing population, our sedentary lifestyle, and obesity. Venous thromboembolism (VTE) (DVT and PE) remains the commonest cause of preventable death and major morbidity in hospital patients.

The University Department of Vascular Surgery based at the Heart of England Foundation NHS Trust (HEFT) offers the full range of medical, surgical and endovascular treatments for arterial and venous disease and has a national and international reputation for its clinical and basic science research.

During this Student Project you will have opportunities to interact closely with the wide range of professionals that make up the multidisciplinary team (MDT) delivering this care and undertaking research; for example, vascular and endovascular surgeons, interventional vascular radiologists, vascular clinical nurse specialists, vascular technologists, and physiotherapists.

Regardless of what branch of medicine you enter, you will undoubtedly be dealing with patients suffering from, and being treated for, vascular (arterial and/or venous) disease.

So we very much hope that this Student Project will appeal, not just to budding surgeons, but to a wide range of students with varying career ambitions in primary and secondary care.

Learning and Teaching Opportunities

During this Student Project you will receive small group teaching and practical experience relating to the following clinical areas:

1. Management of abdominal (AAA) and thoracic aortic aneurysm (TAA):
a. Introduction to the UK Abdominal Aortic Screening Programme, quality improvement programme (QIP) for AAA and other national initiatives (Mr Mark Gannon, Consultant Vascular Surgeon)

b. Standard and complex endovascular aneurysm repair (EVAR) – the evidence base; description of techniques; outcomes; and practical demonstration of the 3-D CT workstation for stent-graft planning (Mr Donald Adam, Senior Lecturer and Consultant in Vascular and Endovascular Surgery)

c. Attendance at AAA surveillance and endovascular aneurysm repair (EVAR) clinics (Mr Gareth Bate and Ms Yvonne Hall, Clinical Nurse Specialists)

d. Diagnosis and management of arterial and venous leg ulcers; practical demonstration of, and an opportunity to undertake, duplex Doppler ultrasound scanning, measurement of ankle brachial pressure index (ABPI), and bandaging techniques (Mr Gareth Bate, Clinical Nurse Specialist)

2. Diagnosis and management of intermittent claudication (IC) with the opportunity to attend IC clinics and supervised exercise classes; practice measuring ABPI, duplex Doppler scanning (Ms Yvonne Hall, Clinical Nurse Specialist)

3. Diagnosis and management of critical limb ischaemia (Mr Martin Claridge, Consultant Vascular Surgeon)

4. Management of patients undergoing major limb amputation including rehabilitation (Ms Elizabeth Geer, Vascular Physiotherapist)

5. Vascular laboratory, including opportunity to practice the duplex Doppler ultrasound (Ms Corinna Gomm, Mr Ivan Kalik, Mr Imran Khan, Vascular Technologists)

6. Surgery for haemodialysis and peritoneal dialysis with the opportunity to spend time in the dialysis unit / renal ward with the renal physicians (Mr Teun Wilmink, Consultant Vascular Surgeon)

7. Diagnosis and management of carotid artery disease (Mr Harmeet Khaira, Consultant Vascular Surgeon)

8. Diagnosis and management of lower limb venous disease: venous thrombo-embolism (VTE) and chronic venous insufficiency (Professor Bradbury and Mr Gareth Bate)

9. How to run a successful Vascular Directorate in a large NHS Foundation Trust (Mr Mark Scriven, Clinical Director and Consultant Vascular Surgeon; Ms Kate Duffield, Directorate Manager)

10. Opportunities to attend the interventional angiography suite and observe interventional radiological (IR) procedures (Dr Arul Ganeshan and IR colleagues)

11. Opportunities to attend the operating theatres to watch arterial and venous open and endovascular surgery (all vascular surgeons)

This list of learning and teaching opportunities is not exhaustive and may be subject to change depending on the availability of key personnel and appropriate patients.

We will, of course, do our best to tailor the program to meet individual student’s particular interests and ambitions.

A wide range of resources will be made available.

You will be given time and help to choose a topic of particular interest to you; this will form the basis of your presentation and dissertation.

**Assessment**

Each student will make a verbal presentation on their chosen topic to the rest of the group (30% of the overall module mark). The written dissertation will form the other 70% of the module mark.
**Outcomes**

At the end of the Student Project you will understand:

1. How a multidisciplinary team of surgeons, interventional radiologists, physicians, clinical nurse specialists, physiotherapists and other professional groups deliver care to different patient groups, presenting with a wide range of vascular (arterial and venous) conditions, using the full range of available medical, surgical and endovascular treatments

2. The challenges facing clinicians and NHS managers trying to deliver ever more complex healthcare packages to an ageing and increasingly co-morbid patient population at the time of unprecedented financial constraint

3. How a University of Birmingham academic surgery department uses its resources and clinical activities to undertake clinical and basic science research that has a national and international impact on the management of patients with vascular disease

We very much hope that you will find the above an attractive option for your Student Project and very much look forward to welcoming you to our Department in April.

**Professor Andrew Bradbury**

**Professor of Vascular Surgery**