CONSULTATION DOCUMENT

Improvements to vascular services in Cheshire and Merseyside

Contents

"The current review of vascular services in Cheshire and Merseyside is a once in a generation opportunity to shape the provision of increasingly specialist vascular and endovascular care to our population. This can only be brought about by concentrating expertise into a small number of centres dealing with an increased volume of patients, which we know results in better outcomes for our patients."

John Brennan
Consultant vascular surgeon
Royal Liverpool Hospital

Introduction

This document describes some improvements that the NHS is planning to make to the way vascular services are provided in Cheshire and Merseyside, and asks you for your views on these changes.

We want to make sure that all of our vascular services give patients care of the highest possible quality. Although current services are good and offer safe treatment, we believe that to sustain high quality services into the future, things will have to change, which may involve the relocation of some services. This document sets out the planned changes, why they are necessary, what benefits they will bring and how they will be delivered.

There is a glossary on page 11.

What are vascular services?

Vascular services are for people with disorders of the arteries and veins. These include narrowing or widening of arteries, blocked vessels and varicose veins, but not diseases of the heart and vessels in the chest.

These disorders can reduce the amount of blood reaching the limbs or brain, or cause sudden blood loss if an over-stretched artery bursts. Vascular specialists also support other medical treatments, such as kidney dialysis and chemotherapy.

All of these diseases used to be treated by surgery only. More recently, specialists have been able to treat many vascular disorders by reaching the site of the problem via the inside of the blood vessels. This is known as interventional radiology, and is a much less invasive approach. Making these advanced techniques readily available to all patients is one of the goals of the review.

"There is good evidence to suggest that complex vascular procedures have better outcomes when performed in major centres with multidisciplinary teams working closely together. Major trauma and endovascular aneurysm repair are good examples of procedures where groups of interventional radiologists and vascular surgeons can obtain better results for patients. When patients realise the benefits of arterial centres, they will be willing to travel for their elective and emergency treatment. The high volume of work will result in more experience in dealing with vascular disease and produce dedicated specialist doctors to provide the service. Fewer, larger, better staffed high quality vascular arterial centres will enable patients to obtain better treatment for vascular disease."

Gian Abbott
Consultant interventional radiologist
Countess of Chester Hospital

At the moment, treatment for vascular conditions takes place at most district hospitals. The district hospitals in Cheshire and Merseyside which currently provide vascular services are Aintree Hospital, Arrowe Park Hospital, Countess of Chester Hospital, Halton Hospital, Leighton Hospital Crewe, Royal Liverpool Hospital, Southport Hospital, Warrington Hospital and Whiston Hospital.

Why are vascular services important?

Vascular services are an important part of the local NHS. People helped by vascular services include:

People with abdominal aortic aneurysms: This is a condition in which the main artery in the abdomen becomes stretched and prone to bursting. Timely detection and treatment of abdominal aortic aneurysms prevents later problems with rupture and bleeding, and can be life-saving. About 350 aortic aneurysm repairs are carried out annually on people from Cheshire and Merseyside.

People with strokes or transient ischaemic attacks (TIAs or mini-strokes): Sometimes, these problems with the blood supply to the brain occur because of a narrowing in a blood vessel in the neck called the carotid artery. This can be treated with an operation to improve the flow of blood and reduce the risk of future strokes. About 300 of these procedures are carried out annually on people from Cheshire and Merseyside.

People with poor blood supply to the feet and legs: Some people, particularly those who smoke or have diabetes, can develop narrowings in the blood supply to the legs and feet. This can cause pain on walking, ulceration and infection. Surgical or interventional radiological treatment can improve the blood supply, make walking easier and prevent the serious complications of inadequate blood supply. About 450 of these procedures are carried out annually on people from Cheshire and Merseyside.

All these operations take place in local hospitals in Cheshire and Merseyside. However, some people live nearer to a hospital in Manchester or Staffordshire and may have their operations there instead.

Why do we need to change how we provide vascular services?

To provide the best possible care for our patients

Treating vascular disease very well is not easy. Research shows that the chances of survival and improved quality of life after treatment of arterial diseases are greatest when patients are treated by a highly trained specialist team working in a large centre to which many patients are referred.

> "With the increasing evidence base which links higher volumes to improved clinical outcomes, a reconfiguration of vascular services across the region is timely. We are very happy to be part of a process that will improve patient quality of care in the NHS."
>
> **Sameh Dimitri**
> **Consultant vascular surgeon**
> **Countess of Chester Hospital**

The more operations carried out at a particular hospital, the more likely it is that treatment will be successful. Seeing more patients allows doctors and other staff to hone their skills and maintain them at the highest level, ensuring that patients get the care they need.

This means that we need to have a small number of hospitals carrying out higher numbers of operations, rather than lots of hospitals carrying out only a few operations each year.

To ensure specialist doctors are available at all times

In some smaller hospitals, there are not enough consultants to provide high quality twenty-four hour care for patients with vascular diseases. By concentrating specialists in fewer

hospitals and ensuring patients are taken to those hospitals promptly, we can ensure everyone gets the treatment they need, when they need it.

One particular issue is the availability of interventional radiology. Skilled consultants can use specialist techniques to save limbs and organs that might otherwise have to be removed. Changing the service so that round-the-clock interventional radiology rotas become possible will ensure that no-one misses out on these benefits because of where and when they become ill. The delay in accessing treatment will be more than outweighed by the better outcomes.

To meet the standards set by our doctors

Vascular specialists in the UK have set out how they think vascular services should be organised so that they can give their patients the best possible results. We have built on that work with specialists from Cheshire and Merseyside, developing our own clinical standards for our future services; these are in Appendix 1. We are determined to improve our local NHS so that these standards are met in full. We can only achieve this by changing where some treatments are provided.

To make sure that everyone has equal access to innovative procedures, such as keyhole techniques

At the moment, patients in the region are not all able to access the latest treatments and techniques. For example, a type of treatment for blood clots which are blocking important arteries is not at present available at all times in every hospital in Cheshire and Merseyside, because of the way in which interventional radiology services are arranged. We do not think that this is fair and want to make sure that all patients can benefit from innovations such as this.

To be ready for a new screening programme

The NHS is starting to screen older men for abdominal aortic aneurysms. Men who are discovered to have the condition need specialist treatment to reduce their risk of dying from their aneurysm. At present, local vascular services are not set up to undertake a screening programme that would meet the standards required by the NHS.

"The best outcomes from modern treatments for patients with vascular disease require the input of a multidisciplinary team working in an environment with high quality imaging equipment and with access to a wide range of expensive medical devices. It makes clinical and economic sense to concentrate the efforts of the health service on fewer centres to guarantee that all the facilities and personnel are available for our patients."

Richard McWilliams
Consultant interventional radiologist
Royal Liverpool Hospital

What changes are planned?

Vascular services are changing in a similar way throughout the country to secure these benefits for patients. In Cheshire and Merseyside, we are proposing that hospitals work in partnership to deliver vascular services, with complex and emergency operations carried out at a small number of specialist vascular centres and the remaining care continuing to be provided locally. The only services which will be relocated are surgery on the arteries and some more complex endovascular procedures. There will be no change in the location of outpatient clinics, initial investigations, surgery for venous disease, amputation, some angioplasties and follow-up, all of which will continue to be available at local hospitals, provided they meet quality standards. Emergency transfers will be completed quickly enough that the improved service outweighs any effect of a delay.

"We vascular surgeons know that hospital services for patients with blood vessel disease can be improved. This review will guarantee that patients with blood vessel disease in Cheshire and Merseyside will receive the best possible standard of hospital care, in a timely fashion."

Francesco Torella
Consultant vascular surgeon
Aintree Hospital

Pathways of elective care for vascular disorders

The flowchart on page 7 shows the pathway of care of patients who consult their GPs with vascular problems. It shows that only one of the six key steps in the pathway of care will change as a result of the proposed improvements to vascular services.

How many patients will be affected?

We cannot yet tell exactly how many patients will receive their specialist arterial treatment at a different hospital as a result of these changes. This is because the number depends on which hospitals become vascular centres. Our estimate is that about 550 patients a year will be affected in this way, having a longer journey time but with better results following treatment.

Present arrangements		Proposed future arrangements	
Step	**Setting**	**Step**	**Setting**
Patient sees GP	Local GP surgery	Patient sees GP	Local GP surgery
↓		↓	
GP refers to vascular specialist	Local GP surgery	GP refers to vascular specialist	Local GP surgery
↓		↓	
Outpatient consultation	Local hospital	Outpatient consultation	Local hospital
↓		↓	
Investigations	Local hospital	Investigations	Local hospital
↓		↓	
Arterial operation	Local hospital	Arterial operation	Vascular centre
↓		↓	
Follow-up	Local hospital	Follow-up	Local hospital

How many vascular centres will there be?

At this stage, we think about two vascular centres would be optimal. This will ensure that

- all patients are treated at hospitals that meet the minimum number of operations per year specified by local clinicians (Appendix 1) and where specialist surgeons and interventional radiologists are available all the time
- care will still continue if one hospital becomes temporarily unavailable, for example because of a fire or an outbreak of infection.

However, the purpose of the consultation is to check that these benefits are worth the change in accessibility, so the final outcome depends on what the consultation shows.

Which hospitals will be vascular centres?

We do not yet have all the information we need to say which hospitals might become vascular centres. We have proposed clinical standards for the vascular centres and other hospitals (Appendix 1), but there are other factors we will need to take into account when we decide upon the most suitable hospitals. These factors are set out on pages 8 and 9. We

want to wait until we have heard your opinions about these aspects of vascular services before we decide on how the vascular centres will be chosen.

What are the benefits of the changes?

The changes will mean that

- Patients have better outcomes from vascular procedures. They will be more likely to survive aortic aneurysm surgery and less likely to have a stroke after treatment of a narrowing in the carotid artery. We estimate that three to five lives a year could be saved if surgery was concentrated in fewer centres. In addition, fewer patients are expected to suffer avoidable complications of surgery, such as renal failure, stroke and damage to the blood supply to the spinal cord and legs.

> "The national strategy to consolidate major vascular surgery into fewer, larger centres is based on evidence that patients get better outcomes at larger centres."
>
> **Stephen Blair**
> **Consultant vascular surgeon**
> **Arrowe Park Hospital**

- The new clinical standards will ensure that designated vascular centres and other hospitals offer prompt access to high quality services, and will be monitored against those standards to make sure they continue to provide a consistently high service.
- Patients can have a wider range of treatments, because of the twenty-four hour availability of consultant interventional radiologists.
- Screening for abdominal aortic aneurysms can be successfully introduced. This will save about 150 lives per year in Cheshire and Merseyside, because people with a problem will be detected early and treated before there is a risk of life-threatening bleeding.

Are there any risks from the change?

The transition period will need careful management to ensure services continue to be delivered successfully, and that relationships are correctly set up between the vascular centres and other parts of the NHS. Non-medical staff, such as nurses and technicians, play a vital role in vascular services. We will need to ensure that they are able, if necessary, to transfer to new hospitals so that their skills are not lost to the local NHS.

How will vascular centres be selected?

We are proposing the following criteria, but would like your comments on whether they are the right ones:

1. *Compliance with clinical standards (Appendix 1)*

   Hospitals that would like to be vascular centres will need to show how they will satisfy the clinical standards.

2. *Maximum degree of co-location with inter-dependent clinical services*

   People who are in hospital because they have just had a stroke, people with kidney disease and people with major injuries benefit from rapid access to vascular services (Appendix 2). This is easiest if all the services such people need are available in one hospital, but we cannot achieve this for all services in every hospital for practical reasons. The clinical standards require a vascular centre to be able to provide a vascular specialist to other hospitals quickly.

3. *Close to where most people live, with good public transport links*

   If patients are to travel further for some parts of their treatment, we need to make the journey as straightforward as possible for them and their visitors.

4. *Lowest investment required to bring about the changes*

   We need to bring about the service reconfiguration at the lowest financial cost to the NHS.

"From a Southport and Ormskirk perspective I feel an important benefit of an arterial centre for our patients would be on-site 24 hour specialist care for our major vascular cases allowing prompt treatment of complications or issues arising from their condition without the need for transfer due to lack of a vascular specialist out of hours."

Frank Mason
Consultant vascular surgeon
Southport Hospital

The consultation process

The necessity for change is evident to all the Primary Care Trusts, hospitals and vascular specialists in Cheshire and Merseyside. They feel a clear responsibility to arrange services in as safe and effective a way as possible, and are therefore keen to carry out the reconfiguration.

Given the strength of scientific evidence and professional consensus, we are not consulting on whether to make the change. However, we need your views on how vascular centres should be chosen, and also on the balance between local access and high-quality specialist care.

The Project Board will review the results of the consultation, and publish a report on what it revealed. Hospitals wishing to be vascular centres will be invited to explain how they will fulfil the criteria and quality standards. The Project Board will then recommend which hospitals should become vascular centres, with local NHS commissioners making the final decisions.

There are a number of ways in which we are trying to make sure that we hear from as many of the people of Cheshire and Merseyside as possible. The details are below. We have organised two key meetings, the first for clinicians and commissioners, and the second for patients, carers, local LINk members and the general public. Health Overview and Scrutiny Committee members are also invited to the second meeting, and we have been invited to present our plans to some Health and Wellbeing Scrutiny Committees. We will invite

Cheshire and Merseyside MPs who are unable to attend these events to a meeting to share their views and hear the feedback from stakeholders.

In addition to events, the consultation is accessible electronically by accessing PCT websites. NHS Stakeholders and the public can view and download this consultation document, and the questions posed at the events will be uploaded on to the internet for all NHS Stakeholders and members of the public to post their feedback. Alternatively, you can request paper copies of the consultation document, and ask questions by post; a prepaid return reply will be provided. For postal requests, please contact Jackie Robinson on 0151 244 3459 or email Jacqueline.robinson@knowsley.nhs.uk

All feedback will be collated and submitted in report format for the Project Board to consider. The Project Board recommendations will be sent to Cheshire and Merseyside PCTs who will take the final decision. The outcome of their decision will be made public, all respondents will be sent this information and it will be publicised on each PCT website.

Key dates

27 January 2011	Consultation opens
27 January 2011	Consultation event for NHS stakeholders
10 February 2011	Consultation event for public and patient stakeholders, members of locality Health Overview and Scrutiny Committee
February 2011	Consultation with Cheshire and Merseyside MPs
March 2011	Consultation closes
May 2011	Recommendation announced
May to October 2011	Preparation for reconfiguration
November 2011	Reconfiguration begins. This will be undertaken in phases.

Tell us what you think

NHS staff can comment by attending a consultation event from 2.00 pm to 4.00 pm on 27 January 2011 at the Halliwell Jones Stadium, Winwick Road, Warrington WA2 7NE. If you would like to come, please register in advance with jacqueline.robinson@knowsley,nhs.uk or telephone (0151) 244 3459.

Alternatively, you can respond to the consultation questions which will be posted onto NHS Knowsley Survey Monkey. Please go to www.surveymonkey.com/s/CMVSR-Staff after 28 January 2011.

Patients and the public can comment on the consultation by attending a consultation event from 12.30 pm to 3.30 pm on 10 February 2011 at the Halliwell Jones Stadium, Winwick Road, Warrington WA2 7NE.

Attendance will need to be registered as above. Transport can be provided to support your attendance.

If you wish to comment on via the internet, please go to www.surveymonkey.com/s/CMVSR-public after 28 January 2011.

Glossary

An **abdominal aortic aneurysm** is a condition in which the main artery in the abdomen becomes stretched and prone to bursting. If it bursts, major bleeding occurs, which may be fatal.

An **angioplasty** is an interventional radiological procedure to widen an artery which is narrowed by disease.

Carotid endarterectomy is an operation to remove a narrowing from the carotid artery, which carries blood to the brain. In correctly selected patients, the operation reduces the risk of a future stroke.

Endovascular procedures are tests and treatments carried out via the inside of blood vessels.

Interventional radiologists are doctors trained to investigate people with vascular disease, to find out what and where the problem is. They can also treat vascular disease by gaining access to the site of the problem via the inside of blood vessels.

A **stroke** is a permanent disruption to the brain's blood supply. Strokes can cause problems with speech or movement, and can be fatal.

Transient ischaemic attacks occur when the blood supply to the brain is temporarily interrupted. Although full recovery occurs, they indicate a higher risk of a future more severe stroke.

Vascular centres are hospitals with enough specialist staff and facilities to ensure the best possible outcomes for all patients who are referred there.

Vascular services are for people with disorders of the arteries and veins. These include narrowing or widening of arteries, blocked vessels and varicose veins, but exclude diseases of the heart and vessels in the chest.

Vascular specialists are doctors who treat vascular disorders. Some are vascular surgeons and others are interventional radiologists.

Vascular surgeons see patients with vascular disease in outpatients, arrange investigations, perform surgical operations and follow their patients up after treatment.

Appendix 1: Quality standards for vascular services

Introduction

In June 2010, the Cheshire and Merseyside vascular review convened a Clinical Advisory Group to develop clinical standards for vascular services. These were to guide the reconfiguration of vascular services in the region, and specifically to ensure that hospitals providing arterial surgery were able to secure excellent outcomes for patients. The standards are partly based on *Quality Standards Services for People with Vascular Disease,* published by the West Midland Quality Review Service.

The standards refer to the vascular service, which is all the hospitals in Cheshire and Merseyside which provide care to patients with vascular disease, and to vascular centres, which are hospitals providing arterial surgery and higher risk interventional radiology as part of the vascular service.

Clinical standards for vascular centres

Number	Standard	Demonstration of compliance
Staffing		
1.	The centre should have a nominated lead consultant vascular specialist (surgeon or radiologist), and nominated lead surgeon, radiologist and nurse with responsibility for ensuring implementation of the quality standards across the centre's catchment area.	Name of lead consultants and lead nurse. *Note: The lead clinicians may be supported by senior clinicians who take a lead role on particular aspects of the service, for example, screening or training.*
2.	A nurse should be available with specialist expertise in each of the following areas: a. Wound, ulcer and diabetic foot management b. Claudication, and lifestyle advice	Staffing details, including cover arrangements. *Notes:* *1. The nurse with specialist expertise in vascular access may*

	c. Amputation and liaison with rehabilitation and limb-fitting services d. Vascular access for patients with renal disease e. Aneurysms. These nurses should have responsibility for leadership and service development for their area of specialist expertise. There should be arrangements for cover during absences.	*be managed by the renal service or by the vascular service.* *2. These specialist roles may be undertaken on a full-time or part-time basis and may include, for example, senior ward nurses with additional responsibilities. Sufficient time should, however, be allocated for the leadership and service development aspects of the roles.* *3. Specialist expertise should be available to all patients from the centre's catchment area. The roles may, however, be undertaken by different people in different localities.*
3.	A consultant vascular surgeon should be available at all times.	Staffing details. *Note: A minimum of a 1:6 on call rota is required to achieve this standard.*
4.	Robust middle-grade cover must be in place.	Staffing details. *Note: As an aspiration, this middle grade cover should be provided by a vascular specialist trainee.*
5.	A consultant anaesthetist with up-to-date skills and competencies in managing vascular emergencies should be available at all times.	Staffing details
6.	A nominated lead consultant anaesthetist should be identified for liaison with the vascular service.	Name of nominated lead
Organisation of care		
7.	All patients should be treated in accordance with normal standards of consent, support and provision of written information.	Written policies

8.	The service should have defined the locations on which in-patient, day case and out-patient vascular services are provided. Each vascular service should have only one in-patient arterial site. Out-patient vascular services should take place on, at least, all hospital sites accepting general medical and surgical emergency admissions.	Locations of services agreed by commissioners. *Notes:* 1. *In hospitals without on-site in-patient vascular services, out-patient and day surgery or interventional procedures may be provided by local vascular specialists or by specialists visiting from another hospital – usually the hospital with in-patient vascular services.* 2. *The best possible local access to vascular services should be achieved by providing out-patient and day case services as close to patients' homes as possible. This may include locations other than those admitting vascular, general medical and general surgical admissions.*
9.	A consultant interventional radiologist should be available at all times.	Staffing details. *Note: A minimum of a 1:6 on call rota is required to achieve this standard.*
10.	Participation in the interventional radiology service should be open to all interventional radiologists from hospitals in the centre's catchment area who wish to participate, subject to their maintaining competence.	Details of service available. *Notes:* 1. *The radiology service should satisfy the requirements in The Royal College of Radiologists' document 'Standards for providing a 24-hour interventional radiology service' (2008), The Royal College of Radiologists/British Society of Interventional Radiology document 'Achieving Standards for Vascular Radiology' (2007) and the RCR/RCN document 'Guidelines for Nursing Care in Interventional Radiology' (2006), or subsequent updates to these*

		documents. 2. *This standard does not require a separate vascular interventional radiology rota.*
11.	For arterial centres which are part of a trauma network, the on-call vascular specialist must be able to reach the trauma unit within thirty minutes.	Records of call-outs
12.	All emergency and elective vascular interventional procedures should be undertaken by consultant vascular specialists or by staff under their supervision. All vascular specialists should undertake sufficient interventional procedures (operations or interventional radiology procedures) per annum to maintain competence.	Details of staffing available. Audit results. *Note:* *For the purpose of considering interventional procedures to maintain competence, activity undertaken in hospitals other than the vascular centre may be included as part of surgeons'and radiologists' activity.* *Recommended staffing levels are one vascular surgeon per 150,000 population or one transplant surgeon with a vascular interest per 100,000 population.*
13.	Endovascular aortic aneurysm repair and carotid stenting should be undertaken only by vascular specialists with competence in these procedures.	Normal clinical governance arrangements in place and implemented. Audit results. *Note: Trust processes for introduction of new procedures should also be applied to the introduction of these procedures.*

14.	A vascular specialist and support staff with competence in interventional radiology should be available for all elective vascular radiology procedures.	Staffing details. *Notes:* 1. *Trust governance procedures must ensure that vascular specialists are competent in the procedures they propose to undertake.* 2. *In hospitals without on-site in-patient vascular services, the vascular specialist and support staff may be based in the local hospital or may travel from another hospital – usually the one where in-patient services are located.* 3. *These services should satisfy the requirements in The Royal College of Radiologists/British Society of Interventional Radiology document 'Achieving Standards for Vascular Radiology' (2007), or subsequent updates of this document.*
15.	An in-patient ward should be available, staffed by nurses and health care assistants with appropriate competence in the care of patients with vascular disease. The competence framework should cover at least: a. Acute Life-threatening Events Recognition and Treatment (ALERT) or similar b. Tissue viability and wound care c. Pain management d. Care of patients with diabetes	Staffing details, competence framework showing expected competences and summary of competence assessments.

	e. High dependency care f. Care of patients with disabilities, including patients with amputations.	
16.	Physiotherapy services should be available daily with time allocated for their work with in-patients with vascular disease.	Details of services available. *Note: These services should be available at weekends as well as Monday to Friday.*
17.	Access to the following services should be available for in-patients with vascular disease: a. Occupational therapy b. Social work. Staff providing these services should have specific time allocated to their work with the vascular service.	Details of services available. *Note: These services may be provided by staff who provide the post-discharge service or by different staff.*
18.	Vascular ultrasound should be available for all vascular out-patient services.	Staffing details. *Note: The service may be available within the out-patient clinic or imaging department. The service may be provided by a vascular technologist, radiographer, nurse or radiologist. More detail on the competences expected for these staff is available from Skills for Health.* *Further advice on competences is expected from the British Medical Ultrasound Society in the near future.* *In hospitals without in-patient vascular services, staff may be based in the local hospital or may travel from another hospital, usually the one where in-patient services are*

		located.
19.	In-patient and community-based rehabilitation services with expertise in the care of patients with vascular disease, including amputees, should be available, including at least: a. Physiotherapy b. Occupational therapy c. Limb fitting and orthoses.	Description of services available. *Note: These services should be available for the whole of the vascular centre's catchment population but may be organised in different ways in different locations.*
20.	Sufficient administrative, clerical and data collection support should be available.	Discussion with staff. *Note: 'Sufficient' is not strictly defined. Clinical staff should not be spending unreasonable amounts of time on administrative duties, including data collection, that detract from their ability to provide patient care.*
Facilities		
21.	The following facilities and services should be available at all times: a. Emergency theatre b. Vascular angiography suite c. Spiral CT d. Critical care (levels 2 and 3)	Details of facilities and staffing available. *Note:* *1. The Medicines and Healthcare Products Regulatory Agency has published guidance on facilities for endovascular aortic aneurysm repair (Joint Working Group to produce guidance on delivering an Endovascular Aneurysm Repair Service). The guidance does not require immediate cessation of endovascular*

	e. Haematology (for urgent cross-match and blood products) f. Blood biochemistry and blood gas analysis g. Facilities for electronic transfer of imaging from, or ability remotely to view imaging at, other acute hospitals within the catchment area of the vascular centre. h. As an aspiration, fixed imaging facilities in a sterile theatre environment for endovascular aneurysm repair. These facilities should have staff with appropriate vascular expertise and sufficient capacity for the expected number of patients with vascular disease, including incoming transfers and unexpected rises in demand.	*aneurysm repair in hospitals without fixed imaging facilities in a sterile theatre environment.* 2. *The angiography suite should be staffed as stated in the RCR / RCN guidance.* 3. *Images must be available via Dicom links (i.e. on PACS) not via a web based system.*
22.	A vascular laboratory should be available at the vascular centre.	Viewing facilities
23.	Magnetic resonance angiography should be available during normal working hours.	Viewing facilities.
24.	In-patient wards for patients with vascular disease should have: a. Hand-held Doppler ultrasound machine b. Portable duplex device.	Viewing facilities.
25.	All vascular surgery should take place in a theatre with: a. All standards for sterility met b. Theatre staff trained in vascular instruments, prosthetics and techniques and in the use of cell salvage devices for	Viewing facilities.

	blood conservation c. Stocks of grafts, instruments and sutures required for patients with vascular disease d. Radiolucent operating tables and X-ray C-arms. X-ray C-arm should have DSA capability. A back up C-arm of similar specification must be available. e. Hand-held Doppler ultrasound machine and portable duplex devices f. Access to blood and blood products.	
26.	Elective clinic and theatre sessions for patients needing permanent dialysis access should be sufficient to meet the needs of patients from the catchment area with end-stage renal failure.	Details of vascular access services. *Notes:* *National recommendation is one session per week for every 120 adult patients on dialysis.*
27.	All vascular out-patient clinics should have: a. Hand-held Doppler ultrasound machine b. Portable duplex scanner c. Facilities to perform ankle brachial pressure tests.	Observation of facilities and equipment.
Clinical policies		
28.	Clinical guidelines should be agreed with the ambulance service covering the clinical indications for taking emergency patients to the vascular centre and the patients who may be taken to	Written guidelines agreed with the ambulance service.

	Emergency Departments without on-site in-patient vascular services.	
29.	Arterial surgery and higher risk arterial interventional radiological procedures are carried out at the arterial centre. Varicose vein surgery and lower risk arterial interventional radiological procedures are carried out at non-arterial centres. The appropriate site at which to carry out amputation will vary. The multi-disciplinary team will decide whether each patient's procedure is sufficiently low risk that it could be carried out appropriately at non-arterial centres, or higher risk and therefore suitable for the arterial centre.	Notes of meetings held.
30.	Clinical guidelines should be in use covering direct transfer from each of the following services to the vascular centre: a. Burns services b. Stroke services c. Neurosurgery services d. Spinal surgery services e. Cardiac services f. Trauma services	Written guidelines. *Notes:* *1. These guidelines should be based on agreed local clinical networks' or regional guidance and pathway or on the latest evidence-based national guidance, including NICE guidance.* *2. Guidelines must be clear about the arrangements for emergency transfer of patients with head injury, sub-arachnoid haemorrhage, hyper-acute stroke, ST elevation myocardial infarction and abdominal aortic aneurysm.* *3. The guidelines may also cover information required for referral, documentation, treatments to undertake before transfer and escorting staff.*

31.	Clinical guidelines should be in use throughout the vascular service covering assessment and management of: a. Open and endovascular repair of abdominal aortic aneurysm b. Surveillance of abdominal aortic aneurysm c. Carotid artery disease d. Diabetic foot e. Leg ulcers f. Claudication g. Varicose veins h. Limb-threatening ischaemia i. Lymphoedema. The guideline for amputation should comply with the standards published by the Vascular Society of Great Britain and Ireland, including their Quality Improvement Framework. These guidelines should cover: a. Indications for seeking advice b. Lifestyle advice c. Investigations d. Treatment options available, including surgical and	Written guidelines. *Notes:* 1. *The guidelines should be explicit about who will undertake interventional imaging (i.e. interventional radiologist or vascular surgeon). Where a vascular service covers more than one hospital, this should be specified for each hospital.* 2. *Guidelines on the assessment and management of abdominal aortic aneurysm should comply with the Vascular Society's document 'Framework for improving the results of elective AAA repair' (2009).* 3. *Guidelines on carotid artery disease assessment and management should be agreed with local stroke / TIA service(s) and should ensure that, where indicated, carotid intervention takes place within 48 hours of referral.* 4. *Guidelines on diabetic foot assessment and management should be agreed with the local diabetes service(s).* 5. *The pre-operative assessment aspects of the guidelines should have been agreed with the local cardiology service/s.*

	radiological interventions and conservative options e. Indications for choice of treatment f. Investigation and management of emergency patients g. Management of haemodynamically unstable patients h. Indications and arrangements for emergency transfer i. Indications and arrangements for non-urgent referral j. Arrangements for transfer of cross-matched blood k. Pre-operative assessment l. Post-operative monitoring m. Management of side-effects and complications of treatment n. Follow up arrangements o. Referral for rehabilitation p. Responsibilities for giving information to patients and carers.	
32.	High-risk patients including all patients undergoing aortic surgery should be seen for pre-assessment by an anaesthetist with experience in elective vascular anaesthesia. Medication should be reviewed and optimised for the intervention.	Written guidelines.
33.	Centres treating patients with thoracic or thoracoabdominal aortic	Viewing equipment

	aneurysms need to have a system in place to treat spinal cord ischaemia with lumbar CSF drainage and blood pressure augmentation at all times.	
34.	Guidelines on lifestyle advice for all patients should be in use covering, at least: a. Support for smoking cessation b. Dietary advice c. Programmes of physical activity and weight management.	Written guidelines.
35.	Clinical guidelines on monitoring and management of peripheral arterial disease risk factors should be in use covering, at least: a. Anti-platelet therapy b. Lipid reduction therapy c. Control of hypertension.	Written guidelines.
36.	Clinical guidelines on the management of patients with diabetes should be in use covering, at least: a. Management of ischaemia and sepsis in patients with diabetes b. Peri-operative management of patients with diabetes c. Indications for involvement of the diabetes service in the care of the patient.	Written guidelines agreed with the local diabetes service.

37.	Clinical guidelines on the management of patients with, or at risk of, impaired renal function should be in use, including: a. Indications for involvement of the renal service in the care of the patient b. Prevention and management of complications.	Written guidelines agreed with the local renal service.
38.	A protocol for by-pass graft surveillance should be in place.	Written protocol. *Note: The protocol may be that no surveillance is undertaken unless further evidence of effectiveness becomes available.*
39.	Clinical guidelines should be in use covering indications for involvement of cardiology services in the care of patients with vascular disease.	Written guidelines agreed with cardiology service.
40.	Clinical guidelines should be in use covering indications and arrangements for referral for psychological support.	Written guidelines.
41.	There should be a local policy covering ultrasound screening of relatives of patients with abdominal aortic aneurysm.	Written policy. *Notes:* 1. *The policy should cover relatives of patients identified by both screening and symptomatic pathways.* 2. *The policy should be consistent with the information for patients.*
42.	Discharge planning guidelines should be in use covering, at least: a. Discharge to rehabilitation facilities	Written guidelines.

	b. Discharge home with support from local rehabilitation facilities c. Referral to limb-fitting service d. Communication with the patient's GP.	
43.	Guidelines, agreed with the specialist palliative care services serving the local population, should be in use covering, at least: a. Arrangements for accessing advice and support from the specialist palliative care team. b. Indications for referral of patients to the specialist palliative care team. c. Arrangements for shared care between the vascular service and palliative care services.	Written guidelines, agreed with specialist palliative care service(s) serving the local population.
44.	A protocol on driving advice should be in use, covering establishing the type of licence and giving appropriate advice on DVLA notification.	Written protocol. *Note:* *The protocol should comply with the latest version of 'Guidance to the current Medical Standards of Fitness to Drive' produced by the DVLA and reviewed every six months*.
45.	The vascular centre's staff should be aware of local guidelines for end-of-life care.	Availability of guidelines relating to end-of-life care that are used by specialist palliative care services in the local area.
Multi-disciplinary working		
46.	A multi-disciplinary team meeting to discuss the treatment of patients with abdominal aortic aneurysms and peripheral vascular	Notes of meetings held.

	disease should be held at least weekly. Job plans must include attendance at multi-disciplinary team meetings.	
47.	All images should be discussed at a multi-disciplinary team meeting attended by a consultant radiologist.	Notes of meetings held.
48.	A ward-based multi-disciplinary team meeting to discuss the care of patients with complex rehabilitation and discharge needs should be held at least weekly, involving at least: a. Ward manager b. Nurse with specialist expertise in care of patients with amputations c. Physiotherapy d. Occupational therapy e. Social work.	Notes of meetings held. *Note: Other staff, for example, community matrons, may also attend the multi-disciplinary team meetings*.
49.	Consultant and nurse representatives of the vascular service should participate regularly in multi-disciplinary meetings with services responsible for the care of: a. Patients with renal disease b. Patients with stroke or TIA	Discussion with renal, stroke and cardiothoracic surgery services.

50.	Multi-disciplinary clinics for assessment of patients with diabetes and complex foot problems should be held involving: a. Vascular surgeons b. Diabetes services c. Orthopaedic services d. Orthotic services e. Podiatry services.	Details of services available.
51.	A meeting with local rehabilitation services should be held at least annually to review the links with the vascular service and address any problems identified.	Notes of meetings held.
52.	The vascular centre should offer an educational session on the assessment of vascular emergencies for emergency department staff, general surgeons, GPs and ambulance staff at least annually.	Details of sessions provided. *Note:* *The educational session should be offered to staff from all hospitals within the catchment area of the vascular centre.*
Clinical audit		
53.	The centre should collect and submit data to the National Vascular Database (all index procedures) and British Society of Interventional Radiology Registries. This standard is of the highest importance.	National Vascular Database reports showing risk-adjusted comparative outcomes for the centre. BSIR Registries information. *Note:* *1. Data should cover all parts of the vascular service including activity in hospitals without on-site in-patient services.*

		2. *Appropriate support staff are needed to collect and upload data.*
54.	The centre should comply with national mortality standards.	Annual report
55.	The centre should have an annual programme of audits covering at least: a. Number of interventional procedures (surgical and interventional radiology) undertaken by each vascular specialist in the centre's catchment area b. Medical management of patients with peripheral vascular disease c. Compliance with evidence-based guidelines.	Details of audit programme. *Note: Audits should cover all parts of the vascular service including activity in hospitals without on-site in-patient services and should include comparison of HES data and National Vascular Database / BSIR Registries numbers. Audits of operations by surgeon should include all vascular operations, including any undertaken by general surgeons.*
56.	The centre should produce an annual report summarising activity, compliance with quality standards and clinical outcomes. The report should identify actions required to meet expected quality standards and progress since the previous year's annual report.	Annual report. *Note: The National Vascular Database reports will provide much of the data for the annual report.*
57.	All policies, procedures and guidelines should comply with Trust document control procedures.	Policies, procedures and guidelines meeting reasonable document control quality requirements of monitoring, review and version control.

Clinical standards for non-arterial centres

Number	Standard	Demonstration of compliance
Equipment and facilities		
1.	Vascular out-patient clinics should have: a. Hand-held Doppler ultrasound machine b. Portable duplex scanner Facilities to perform ankle brachial pressure tests.	Observation of facilities and equipment.
2.	The service should have defined the locations on which in-patient, day case and out-patient vascular services are provided. Each vascular service should have only one in-patient arterial site. Out-patient vascular services should take place on, at least, all hospital sites accepting general medical and surgical emergency admissions.	Locations of services agreed by commissioners. *Notes:* 1. *In hospitals without on-site in-patient vascular services, out-patient and day surgery or interventional procedures may be provided by local vascular specialists or by specialists visiting from another hospital – usually the hospital with in-patient vascular services.* 2. *The best possible local access to vascular services should be achieved by providing out-patient and day case services as close to patients' homes as possible. This may include locations other than those admitting vascular, general medical and general surgical admissions.*

3.	Vascular ultrasound should be available for all vascular out-patient services.	Staffing details. *Note: The service may be available within the out-patient clinic or imaging department. The service may be provided by a vascular technologist, radiographer, nurse or radiologist. More detail on the competences expected for these staff is available from Skills for Health.* *Further advice on competences is expected from the British Medical Ultrasound Society in the near future.* *In hospitals without in-patient vascular services, staff may be based in the local hospital or may travel from another hospital, usually the one where in-patient services are located.*
4.	Non-arterial centres should have available sets of instruments for common arterial procedures, in case they are unexpectedly required.	Inspection
Organisation of care		
5.	Arterial surgery and higher risk arterial interventional radiological procedures are carried out at the arterial centre. Varicose vein surgery and lower risk arterial interventional radiological procedures are carried out at non-arterial centres. The appropriate site at which to carry out amputation will vary. The multi-disciplinary team will decide whether each patient's procedure is sufficiently low risk that it could be carried out appropriately at non-arterial centres, or higher risk and therefore suitable for the arterial centre.	Notes of meetings held.

Clinical audit		
6.	All policies, procedures and guidelines should comply with Trust document control procedures.	Policies, procedures and guidelines meeting reasonable document control quality requirements of monitoring, review and version control.
7.	The centre should collect and submit data to the National Vascular Database (all index procedures) and British Society of Interventional Radiology Registries.	National Vascular Database reports showing risk-adjusted comparative outcomes for the centre. BSIR Registries information. *Note:* *1. Data should cover all parts of the vascular service including activity in hospitals without on-site in-patient services.* *2. Appropriate support staff are needed to collect and upload data.*
8.	The centre should have an annual programme of audits covering at least: a. Number of interventional procedures (surgical and interventional radiology) undertaken by each vascular specialist across the centre's catchment area. b. Medical management of patients with peripheral vascular disease. c. Compliance with evidence-based guidelines.	Details of audit programme. *Note:* *1. Audits should cover all parts of the vascular service including activity in hospitals without on-site in-patient services and should include comparison of HES data and National Vascular Database / BSIR Registries numbers. Audits of operations by surgeon should include all vascular operations, including any undertaken by general surgeons.* *2. Data should cover all parts of the vascular service including activity in hospitals without on-site in-patient*

		services. 3. *Appropriate support staff are needed to collect and upload data.*

Clinical Advisory Group

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Appendix 2: Inter-dependent clinical services

Patients often have more complex care needs which overlap several clinical services. We need to make sure that, after the change in vascular services, patients get care that is at least as joined up as at present.

The most important of these linked services are those for people with kidney failure, stroke, diabetes and trauma. Clinicians have recommended arrangements to ensure services work well together:

Stroke

The National Stroke Strategy requires that patients presenting with a high-risk transient ischaemic attack or minor stroke should be assessed for possible carotid endarterectomy within 24 hours, and within seven days in all other cases, with carotid intervention within 48 hours of referral where clinically indicated.

The future model of care in Cheshire and Merseyside is that patients with an obvious stroke will be taken direct to a hyper-acute stroke centre for immediate imaging, thrombolysis and other urgent management. After a few days, they will be transferred to a more local hospital to continue rehabilitation.

- It is highly desirable, but not essential, that arterial centres are co-located with hyper-acute stroke centres. This is because it will expedite carotid endarterectomy for those patients admitted there.
- The arterial centre will need to be able to offer treatment in line with these standards to patients presenting there and at other hospitals.
- The selection of a hospital as a hyper-acute stroke centre will be a factor in its favour when identifying arterial centres.

Diabetes

Most patients with diabetes presenting with vascular disease can be investigated at a non-arterial centre hospital and referred if necessary as an outpatient. Inpatients can be investigated and in most cases treated with angioplasty without recourse to open vascular surgery. The minority of patients presenting with an acutely ischaemic limb or other vascular emergency would need transfer to the arterial centre. Inpatients with diabetes benefit from specialist diabetic input, and there is evidence that this may shorten length of stay.

- The arterial centre will need to be able to offer immediate admission to diabetic patients with vascular emergencies.
- Arterial centres will need to ensure adequate input from the diabetes team.

Critical care and trauma

The reconfiguration of trauma services on Cheshire and Merseyside is likely to culminate in the designation of four or five hospitals as trauma units; no hospital in the North-West has all the clinical components necessary for trauma centre status. Only a small minority of trauma cases involve vascular injury, so it is desirable but by no means essential that these hospitals should be arterial centres – in any case, the likely number of these centres is fewer than the number of trauma units.

When a patient with vascular trauma is admitted to a hospital without arterial surgery on site, a general surgeon can treat the haemorrhage and stabilise the patient, while a vascular surgeon is called from elsewhere. The vascular surgeon's role is to repair and reconstruct the damaged vessels, and s/he would need to be onsite within thirty minutes of being called.

With regard to critical care, all hospitals in Cheshire and Merseyside are expected to have a 24/7 intensivist rota, and nearly all do. Any hospital offering arterial surgery should offer this level of cover.

- The selection of a hospital as a trauma unit, and especially as a trauma unit plus, will be a factor in its favour when identifying arterial centres.
- Critical care capacity should be considered in the configuration of vascular services, with a requirement for 24/7 intensivist cover.

Renal services

Hospitals fall into three categories: those with no haemodialysis facilities, those offering nurse-led haemodialysis to outpatients supported by a visiting nephrologist, and those with a full-scale renal unit. There are three of the latter in Cheshire and Merseyside: the Royal Liverpool, Aintree and Arrowe Park.

There are three areas where renal and vascular services intersect:

Creating and maintaining arterio-venous fistulae for haemodialysis patients
From April 2011, Trusts will face financial penalties if more than 20% of patients on long-term haemodialysis lack permanent vascular access via an arterio-venous fistula. Fistulae need to be created within six weeks of referral to a surgeon. Fistulae sometimes stenose or thrombose, both of which need prompt interventional radiology to maintain or restore patency.

For this reason, onsite vascular services contribute substantially to the success of a haemodialysis centre.

The management of acute renal failure after vascular surgery
Patients with acute renal failure after surgery need expert management, not least to shorten the length of stay in critical care. Nephrologists are helpful in such situations, but an appropriately trained intensivist is also fully satisfactory.

The management of peripheral vascular disease in patients on dialysis
Cardiovascular and peripheral vascular disease is common among patients on dialysis. When they are admitted for any reason, patients on dialysis need particularly expert

treatment because of their renal failure. Therefore, many hospitals without a full renal service have a policy of not admitting patients on dialysis for any indication. So substantial clinical difficulties would arise for a renal centre which was not also an arterial centre, unless existing clinical relationships could mitigate the problem.

- Ideally renal and vascular units should co-exist on the same site. Any other arrangement requires close discussion between hospitals to ensure that these standards are achieved.

A renal unit's key requirements for vascular support are:

1. Access to imaging for work up of a new vascular access (within four weeks).
2. Access to imaging for diagnosis in cases of sub-optimally performing fistulas (within two weeks, degree of urgency will depend of degree of fistula underperformance).
3. Facilities for long-line placement with radiology imaging and interventional radiologist expertise (within 24 hour interval to reduce the number of temporary procedures and duration of in-patient stay)
4. Elective list time for placement of Tenchkoff catheters and peripheral haemodialysis access (enough list space so that 80% of patients known to nephrology for over 90 days and planned for peritoneal dialysis start on that treatment and 80% of patients start haemodialysis with peripheral access).
5. Access to theatres (and surgical staff) for uncontrollable haemorrhage, or graft or peritoneal sepsis (within hours).
6. Access to ultrasound for diagnosis of acutely thrombosed fistulae (09.00 to 17.00 seven days a week)
7. Access to interventional radiology for diagnosis, angioplasty and thrombolysis (09.00 to 17.00 7 days a week).
8. Access to theatres and surgical staff for fistula thrombectomy (09.00 to 17.00 seven days a week).