Operating model for the Kent and Medway Vascular Network

The Kent and Medway Vascular Surgical service is a network model that works across a number of sites with a single inpatient centre. The model will be structured as follows:

- **Single Arterial Centre** – This will be based in East Kent at the Major Emergency Centre with Specialist Services and will sees the creation of an emergency hospital centre with specialist services. The Arterial Vascular Centre will be the only hospital within the network that provides all inpatient care for both elective and emergency vascular care, providing all types of vascular surgery and vascular interventional radiology. This Arterial Centre will be the only hospital in Kent and Medway that has on site a 24/7, full, year round specialist vascular team to manage all inpatient elective and emergency care. The arterial centre will also be the managerial centre for the network. The arterial centre will also fulfil all the components of care available in an enhanced non-arterial vascular centre. This reflects the national recommendation for best practice. All vascular in patient care will take place in the single arterial centre, this will include recovery from surgery as the specialist vascular skills are required until the patient is fit to either return home or to be transferred to rehabilitation care. This is mainly the case for patients needing amputations although some North Kent patients may wish to return to Medway Hospital for further rehabilitation closer to home. The Arterial Centre will also provide a comprehensive vascular diagnostic and outpatient ambulatory care service for the local population.

- **Enhanced non-arterial vascular centre** - Medway Hospital (MFT) will be an enhanced non-arterial centre and will form an integral part of the Network's model of care. This will be resourced to provide local vascular services that do not require a 24/7 workforce presence and inpatient based vascular interventions. It will have an enhanced weekday presence of a specialist vascular team to support other acute services within the hospital. This hospital will have interventional radiology (IR) services to support day case vascular interventions and other non-vascular IR services. Day-case services will be provided to support activity within the vascular network e.g. renal access surgery and on-going fistula management support interventions. It will also offer a comprehensive vascular diagnostic and outpatient ambulatory care service.

- **Non-enhanced non-arterial hospitals** - Locally across Kent and Medway, the single Arterial Centre will also be supported by non-enhanced non-arterial hospitals. These are hospitals that provide acute care services (typically medicine, surgery, obstetrics), that at times will require on site vascular advice and will require direct contact links to the arterial vascular centre for 24/7 support for vascular advice and patient management. These sites will not have a daily specialist vascular presence, however, the ability to offer full vascular diagnostics and outpatient services for the local population will be available. The non-enhanced non-arterial hospitals will deliver all out of hospital care which will be delivered through the existing Kent and Medway hospitals' building on the current provision at these sites. These hospital sites will deliver a range of services that seek to keep care as close to home as possible for patients and will include:
  - Out patients clinics; i.e. multi-disciplinary clinics, condition specific clinics, one stop shop clinics, nurse led and consultant clinics
  - Pre- and post-operative care
  - Monitoring and management of vascular conditions i.e. Peripheral vascular disease
  - Diagnostics and tests

- Day surgery where appropriate

Operating model for the network arrangements across Kent and Medway

The Kent and Medway vascular network will link with the South East Thames vascular network hosted by and centred on the vascular centre at Guy's and St Thomas' NHS Foundation Trust, London. The geographical patient pathway links that currently exist between Guy's and St Thomas' NHS Foundation Trust and patients in the Dartford and Tunbridge Wells localities will be preserved.

The Guy's and St Thomas' NHS Foundation Trust vascular centre will be the tertiary referral centre that the Kent and Medway vascular network will link with, where required, for the delivery of complex vascular care that is not provided by the Kent based arterial centre.

This network model will mean that clear pathways will be in place across the vascular network to ensure patients receive a seamless and timely service. The network will be responsible for co-ordinating vascular care across the region, ensuring good communications and maximising the delivery of care in the spoke sites. The network will also ensure that there are improved and clear pathways with other clinical specialties, in particular Diabetes care especially foot care/clinics. The amputation rates for Kent and Medway residents are high and the development of a clear pathway between Vascular and Diabetes services will enhance the pathway and facilitate earlier intervention in peripheral vascular disease.

Pathways under the preferred option for the Arterial Centre in East Kent

The preferred option will allow vascular surgical services in Kent and Medway to comply fully with the standards within the national specification.

The preferred option will enable vascular surgical services to be organised to allow the necessary volumes of elective activity to exist alongside a fully compliant consultant emergency on-call rota thus ensuring appropriate critical mass of infrastructure and patient volumes.

In-patient arterial surgery and vascular interventional radiology will be available 24/7 within the arterial centre with a vascular on call rota for vascular emergencies covered by on site vascular surgeons and vascular interventional radiologists to ensure immediate access for emergency procedures and post-operative care. In practice that means a vascular medical team of a minimum of six vascular surgeons and six vascular interventional radiologists to ensure comprehensive out-of-hours emergency cover.

All leg amputations will be undertaken in the arterial centres due to the need to improve perioperative mortality rates. All patients considered for leg amputation will be discussed by the vascular multi-disciplinary team and will be given opportunities for limb salvage. All leg amputation patients/ procedures will be included in the network audit and recorded on the National Vascular Register.

Each surgeon will have an appropriate arterial workload (e.g. in the region of 10 AAA emergency and elective procedures per surgeon, per year and commensurate numbers of lower limb and carotid procedures).

A 24/7 vascular interventional radiology rota will be organised on a network wide basis to ensure that interventional radiology services for other specialties, in local hospitals, are not destabilised. All participants in the rota will have the appropriate skills and competencies to undertake the full range of vascular interventional radiological procedures. Emergency access to vascular interventional radiology will be within 1 hour from initial consultation to intervention.

Day case and first line diagnostics procedures will be provided locally at both the arterial centre and at the enhanced non-arterial centre. Local models of care will be developed for patients with chronic vascular conditions arising from venous insufficiency and diabetes.

The vascular service will provide a diagnostic and treatment service through a multidisciplinary team model.

Patients with vascular disorders will be cared for by specialist vascular teams. These teams will include vascular surgeons, consultant anaesthetists, interventional vascular radiologists, vascular scientists, nurses, radiographers, physiotherapists, occupational therapists and rehabilitation specialists.

The vascular multidisciplinary team will be hosted by the arterial centre in East Kent. Clinicians providing emergency care will be part of the vascular services multi-disciplinary team and be delivering both in- and out-of-hours care in the network arterial centre.

Care of patients will be managed through regular multi-disciplinary team meetings which will occur at least once a week. The membership of the multi-disciplinary team meeting will include a range of clinical disciplines and be formalised. The documentation will include statements on minimum levels of attendance for individuals and quoracy. All clinicians involved with the care and treatment of vascular surgical patients will attend multi-disciplinary team meeting on a regular basis.

Emergency procedures will be reviewed at the next multi-disciplinary team meeting. Discussion at the multi-disciplinary team meeting will precede elective vascular procedures being undertaken, although protocols will be developed to ensure that urgent cases are not delayed inappropriately. The specialist vascular team will also support the care of patients under the management of other specialties.

The following facilities and infrastructure will be available at the arterial centre:

- Outpatient Clinics – will include access to nurses experienced in ulcer and wound dressing. Doppler ultrasound machines will be available. There will be access to Doppler machines in the clinic.
- Vascular Laboratory – the vascular laboratory service will be available for the diagnosis and assessment of arterial and venous disease.
- Vascular Ward – patients with vascular disease will have access to dedicated vascular beds. There will be 24 dedicated beds to accommodate the routine elective work and emergency admissions. These beds will be staffed by an appropriate skill mix of nurses who have been trained in the care of vascular patients. Doppler investigation will be available on the ward.
- Interventional radiology suite with access to nursing staff who have been trained in vascular procedures.
- Operating Theatres – a 24 hour NCEPOD emergency theatre will be accessible at all times to undertake emergency vascular procedures. A vascular operating theatre with experienced vascular theatre staff will be available for elective activity. Facilities for endovascular aneurysm repair will be available with facilities as described by the Joint Working Group to produce guidance on delivering an Endovascular Aneurysm Repair Service

- Anaesthesia – elective vascular services will have dedicated vascular anaesthetic input into elective services, from anaesthetists experienced in dealing with the vascular patient and with a special interest in this area.
- Intensive Treatment Unit (ITU) and High Dependency Unit (HDU) – Facilities with full renal support will be available on-site to support the vascular service.
- Limb Fitting Service –a local limb fitting service will be provided, which meets the standards set by The British Society of Rehabilitation Medicine.

The service will accept all patients who have been referred via their GP or other health care professional to a vascular specialist within secondary or tertiary care, or who have presented as an emergency in secondary care and identified as a vascular emergency. There will also be referrals from the National AAA Screening Programme. Paediatric patients requiring specialist vascular surgery will be referred to G&STT or to one of the other paediatric specialist surgical specialist hospitals in London.

As is already the case, vascular and general surgery will remain separate specialties with vascular surgeons only treating patients with vascular disease, at both consultant and trainee level.

Patients with a vascular emergency will have immediate access to a specialist vascular team at the arterial centre with on-site vascular surgery and interventional vascular radiology.

The arterial centre will perform around 170 AAA procedures, 75 carotids, 50 by-pass cases and 100 major amputations per year. Total activity would be between 1,800 and 2,000 episodes per year at the Arterial Centre.

All vascular consultants including interventional radiologists working in vascular networks will routinely enter data onto the following databases/audits:

- The National Vascular Database
- The Carotid Endarterectomy Audit (CEA)
- National Vascular Registry

Endovascular aneurysm repairs (EVAR) will only be performed at the arterial centre by the clinical team experienced in the management of AAAs. This team will have appropriate expertise in all aspects of patient assessment and the use of endovascular aortic stent-grafts including the necessary expertise to manage complications encountered during these procedures.

All elective and emergency vascular services will be undertaken in adherence to the following NICE guidance:

- CG10 Type 2 diabetes footcare (January 2004)
- CG66/87 Diabetes – type 2 (update) (May 2008/May 2009)
- CG68 Stroke (July 2008)
- CG92 Venous thromboembolism – reducing the risk (January 2010)
- CG119 Diabetic foot problems-inpatient management (March 2011)CG127 Hypertension (August 2011)
- CG147 Lower limb peripheral arterial disease (August 2012)
- TA167 Endovascular stent-grafts for the treatment of abdominal aortic aneurysms (February 2009)
- TA210 Vascular disease – clopidogrel and dipyridamole (December 2010)
- IPG52 Endovenous laser treatment of the long saphenous vein (March 2004)
- IPG60 Thrombin injections for pseudoaneurysms (June 2004)

- IPG74 Balloon angioplasty with or without stenting for coarctation or recoarctation of aorta in adults and children (July 2004)
- IPG79 Stent placement for vena caval obstruction (July 2004)
- IPG127 Endovascular stent-graft placement in thoracic aortic aneurysms and dissections – guidance (June 2005)
- IPG163 Stent-graft placement in abdominal aortic aneurysm – Guidance (March 2006)
- IPG229 Laparoscopic repair of abdominal aortic aneurysm (August 2007) (February 2009)
- IPG388 Carotid artery stent replacement for asymptomatic extracranial carotid stenosis (April 2011)
- IPG390 Endovascular stent-grafting of popliteal aneurysms – (April 2011)
- IPG389 Carotid artery stent placement for symptomatic extracranial carotid stenosis – (April 2011)

Pathways for the Enhanced Non-Arterial Centre pathways in Medway

Under the preferred option, vascular presence at Medway will be primarily required to provide outpatient clinics, perform day case lists, manage ward referrals on inpatients admitted under the care of other specialties, support medical specialities and deal with patient related administration. Other activities may include medical student teaching. The number of sessions required to fulfil these duties is yet to be defined but it will be spread through the week (but a vascular presence may not be provided Monday to Friday from 9 to 5). The aim will be to ensure a presence on part, or all, of 3 to 5 days a week, which will enable inpatient referrals to be seen within 24hrs wherever possible.

Consultant presence

Surgeons will not be present at Medway or at any of the East Kent non-arterial sites outside of specific sessions. It is estimated that 40% of an individual consultants' job plan will be devoted to the Enhanced Non-Arterial Centre or Non-Arterial Centre, with the remainder devoted to the Arterial Centre for consultants with a split-site contract.

Consultants at Non-Arterial Centres will be provided with regular junior medical support , with the service predominantly consultant delivered. Pre-existing arrangements with middle-grade support may be retained as part of delivering the agenda of teaching and training, although in practice, this type of support is likely to be unpredictable, due to commitments to general surgery rotas. These will therefore be regarded as supernumerary and will need to be agreed with the visiting consultants.

Vascular Nurse Specialists

The role of Vascular Nurse Specialists (VSNs) will become increasingly important in the delivery of vascular services generally, especially at Non-Arterial Centres. The role of the VNS will be reviewed and developed in order to support consultant colleagues in out-patient clinics, facilitate the management of inpatient referrals and act as a link for patients being worked up for inpatient treatment at the Arterial Centre. The Network's VNSs already take a very proactive approach, acting as the patients advocate and delivering front line care but in the future they will become the principle point of liaison between the Arterial and Non-Arterial centre.

Emergency cover

Systems are already in place for emergency vascular cover. The initial call regarding a vascular emergency is directed to the on call vascular surgeon at the Arterial Centre. These systems will be reviewed as part of the reconfiguration process and protocols will be updated accordingly.

Emergencies deemed to require admission or urgent assessment will be transferred to the Arterial Centre.

There will be rare occasions in which it may be necessary for a vascular surgeon to travel to the patient. In all circumstances the call for assistance will be directed to the Arterial Centre and the on call vascular surgeon will determine the most appropriate way to manage the case.

Ambulance services will be informed of the changes to vascular services and, where possible, steps will be taken to revise existing operating policies to enable direct transfer of vascular emergencies to the arterial centre, bypassing non-arterial sites. In the event that a vascular emergency presents at a Non-Arterial Centre clear guidelines will be developed to facilitate prompt ambulance transfer, especially in the case of suspected/confirmed ruptured aortic aneurysm. These arrangements are similar to those used to manage major trauma cases.

If an unforeseen emergency occurs in a non-vascular theatre at a Non-Arterial centre the initial call for help will be directed to the on-call vascular surgeon at the Arterial centre to determine the best course of action. Where a vascular surgeon is available locally they can be detailed to attend the case. If there is no vascular surgeon available locally it will be necessary to dispatch a surgeon from the Arterial centre to deal with the emergency if transfer is impossible. Therefore, adequate vascular instruments and operating trays will be kept and maintained at the Non-Arterial Centres for such emergencies.

Outpatient clinics

Outpatient clinic templates will be reviewed in order to ensure there is sufficient capacity for the predicted demand. Booking systems should will enable flexibility within the initially agreed template according to demand in order to ensure that clinics are used as effectively as possible. Templates will be flexible enough to enable urgent referrals to be seen within a week. Very urgent cases will be seen at the Arterial centre within a shorter timeframe if clinically necessary. The system will also enable cases presenting urgently to A&E, or from GPs, to be seen in the next available clinic at the Non-Arterial Centre, rather than being admitted as an emergency to the Arterial Centre.

Where appropriate, new patients will be offered a 'one-stop' service, with consultation and Duplex scanning taking place at their initial visit. This is convenient for patients and reduces the demand for follow-up appointments.

Vascular Lab support

The Vascular Lab will have systems in place to provide follow-up of patients after arterial intervention, avoiding the need for further follow-up appointments after the first post-procedure visit. The Vascular Lab will be located at the Arterial Centre and will provide a base for the aortic surveillance programme for patients with an aneurysm identified outside of the National AAA Screening Programme.

Other Diagnostic services

The relevant diagnostic services will continue to be provided at Non-Arterial Centres within the network. In addition to Duplex ultrasonography patients will have ready access to CT and MR angiography. Both Trusts in the Network have a fully compatible PACS systems in place to ensure rapid transfer of relevant imaging. Most local preoperative workup will be carried out at the Non-Arterial Centre, although more complex cardiorespiratory assessment such as cardiopulmonary exercise testing and stress echocardiography may need to be provided at the Arterial Centre.

Inpatient referrals

At both hospitals currently there are described system for making electronic referrals (or via a vascular secretary/PA) with the stated aim that patients are seen within 24hrs whenever possible. These systems will be reviewed and republished as part of the reconfiguration. If consultant or VSN review cannot take place within a reasonable timeframe, or a more urgent opinion is required, the referrer will be directed to the Arterial Centre on-call consultant to discuss the best course of management.

Day-case lists

These serve the dual purpose of maintaining a vascular presence as well as treating patients locally and will form the bulk, if not all, of the operating at Enhanced Non-Arterial site. The overwhelming majority of day-case work is likely to involve treatment of varicose veins and vascular access work.

The treatment of varicose veins treatment will follow the published NICE guidance (http://publications.nice.org.uk/varicose-veins-in-the-legs-cg168).

Day case general anaesthesia lists may also be performed with provision made for on-site cover, rather than transfer, of the rare patient who may subsequently require an overnight stay.

Vascular access work at the Non-Arterial Centre will include placement of Hickman lines and implantable ports. More complex cases, such as those requiring general anaesthetic or an overnight stay in hospital, will be the subject of local discussion.

Repatriation

The majority of vascular surgical patients will be fit to be discharged home relatively soon after treatment and for these repatriation is not a major issue. An outpatient appointment at their local hospital with their vascular specialist should enable a satisfactory episode of care.

A significant proportion, however, will require prolonged rehabilitation and/or attention to social issues e.g. following amputation. The preferred solution, wherever possible, is for these cases to be repatriated directly to either intermediate or community care without the need for repatriation to a Non- arterial centre. If repatriation is deemed the most appropriate course of action then care will be transferred to an appropriate non-vascular specialist e.g. Stroke, Diabetes, Care of Elderly, General Surgery, Orthopaedic Surgery.

Earlier repatriation to Non-Arterial Centres will make it easier for the Arterial Centre to accept transfers and improve continuity for outpatient follow-up. Clinical Staff at the Non-Arterial centre will have the necessary competencies to manage post-op vascular patients. VNS support in the Non-Arterial Centre will provide vital ongoing care, along with supervision from the visiting vascular consultant. One of the key roles of the VNS will be to link up with community care thus supporting continuity of care for patients in the community.

There will be no named vascular beds in Non-Arterial centres as this has potentially serious implications for continuity of care and cover, both in and out-of-hours. Vascular review by visiting surgeons and locally based VNSs will continue to be a feature of care but vascular input will be minimal once deemed fit for transfer.

Close working between the various relevant agencies will be important to ensure that following acute vascular treatment, patients who are no longer deemed to require an acute vascular bed at the Arterial centre should be transferred promptly along the most appropriate pathway.