

## **SERVICE FRAMEWORK FOR CARDIOVASCULAR HEALTH AND WELL BEING**

### **6.6 PERIPHERAL VASCULAR DISEASE**

Peripheral vascular disease refers to diseases of the blood vessels outside the heart and brain. Four main conditions are considered within this chapter: peripheral arterial disease, abdominal aortic aneurysm, dissection of the thoracic aorta and carotid artery stenosis.

Peripheral arterial disease (PAD) occurs when fatty deposits (atheroma) build up in the inner walls of these arteries and affect blood circulation, most commonly in the arteries to the legs and feet. It can present without symptoms, but often presents as pain on walking (intermittent claudication), pain at rest, or limb threatening reductions in blood supply (acute or chronic limb ischaemia). The latter can lead to amputation. The major preventable risk factors for cardiovascular disease are implicated in peripheral arterial disease. PAD is an independent risk factor for heart disease and stroke. Early detection and treatment, with a focus on secondary prevention including treatment of high blood pressure and high cholesterol reduces the risk of cardiovascular death and limb amputation and improves quality of life.

Carotid artery stenosis (narrowing of the carotid artery) is a risk factor for stroke and prompt treatment has been shown to be beneficial.

An aneurysm is a localised widening (dilation) of an artery. The blood vessel can burst (rupture) because the vessel wall is weakened. Some 5% to 10% of men aged between 65 and 79 years have an abdominal aneurysm in the area of the aorta, the main artery from the heart as it passes through the abdomen. Abdominal aortic aneurysms (AAA) are often asymptomatic but a rupture is a surgical emergency and often leads to death. Through education, screening and surgery vascular surgeons can identify and treat aneurysm prior to rupture.

Prompt recognition of dissection of the thoracic aorta and early treatment can reduce mortality.

Modern vascular surgery is primarily delivered by a highly specialised multidisciplinary team coordinated by a vascular surgeon. This team provides for the holistic treatment of the vascular patient with close interaction with allied specialties

## **SERVICE FRAMEWORK FOR CARDIOVASCULAR HEALTH AND WELL BEING**

including cardiology, stroke medicine, and interventional radiology. Many patients with vascular disease can be managed in the community.

Lymphoedema is a swelling of body tissue due to failure in the lymphatic system which can affect people of all ages. It is chronic and incurable and requires life long management. Lymphoedema can be congenital or it may develop as a result of cancer or its treatment or due to trauma or chronic infection. It can occur in a limb or limbs or in the head and neck, trunk or genital area. It may not become apparent for sometime after trauma (e.g. cancer surgery) and patients remain at risk of developing clinical lymphoedema at a later stage.

It is thought that somewhere in the region of at least 2.5 to 3 thousand people in Northern Ireland suffer from this condition.

The DHSSPSNI, in 2004, published a review of lymphoedema services which outlined steps to be taken to develop quality lymphoedema services for Northern Ireland. The review recommended the development of clinical guidelines for lymphoedema along with proposals for establishing a Lymphoedema Clinical Network. Guidelines for the Diagnosis, Assessment and Management of Lymphoedema were developed under the auspices of CREST and launched along with the Lymphoedema Network for Northern Ireland on February 1<sup>st</sup> 2008.

The network will be responsible for driving the implementation of the guidelines as well as supporting the development of clinical services, facilitating complex case management, improving education, raising awareness and developing the research base in the field of lymphoedema.

This section sets out the measures required to enhance the quality of service for patients with established peripheral vascular disease and to reduce their risks of further cardiovascular disease.

## SERVICE FRAMEWORK FOR CARDIOVASCULAR HEALTH AND WELL BEING

### Overarching standard 33:

All people with a high risk of developing PVD such as patients with diabetes, chronic kidney disease, smokers and the elderly should have accessible and timely care delivered by the appropriate members of the multi-disciplinary foot care team.

#### Rationale:

The available literature confirms the association between renal failure, peripheral vascular disease, foot ulcers, gangrene and amputation, and indicates this association is three to five times greater in diabetes. The risk of amputation (up to 13.8%) is ten times the risk for non-ESRF patients, even if diabetes is taken into account.

There are multiple possible mechanisms underlying this association including accelerated peripheral arterial disease, anaemia and metabolic features of renal failure. There is also evidence that the process of dialysis is itself associated with worsening tissue hypoxia and the incidence of limb gangrene and amputation is particularly associated with the commencement of renal replacement therapy. The results of lower limb revascularisation are poor and once they occur, foot complications in established renal failure are associated with a high mortality.

#### Evidence:

Podiatry Service for Renal Patients. Northern Ireland Regional Audit 2004

Inter-Society consensus for the management of peripheral arterial disease (TASC11) 2007 <http://www.scai.org/PDF/TASC%20guidelines.pdf>

Renal Services Review Northern Ireland, 2002, Department of Health, Social Services and Public Safety [http://www.dhsspsni.gov.uk/renal\\_content.pdf](http://www.dhsspsni.gov.uk/renal_content.pdf)

The Renal Team A Multi-Professional Renal Workforce Plan For Adults and Children with Renal Disease. Recommendations of the National Renal Workforce Planning Group 2002. British Renal Society [http://www.britishrenal.org/workfpg/WFP\\_Renal\\_Book.pdf](http://www.britishrenal.org/workfpg/WFP_Renal_Book.pdf)

The National Service Framework for Renal Services, 2004 [http://www.dh.gov.uk/en/Policyandguidance/Healthandsocialcaretopics/Renal/DH\\_4102636](http://www.dh.gov.uk/en/Policyandguidance/Healthandsocialcaretopics/Renal/DH_4102636)

The National Minimum Skills Framework for Commissioning of Foot Care Services for People with Diabetes, 2006 <http://www.footindiabetes.org/Guidelines/NatMinSkillFramewkFootNov06.pdf>

**SERVICE FRAMEWORK FOR CARDIOVASCULAR HEALTH AND WELL BEING**

Hinchliffe RJ, Jeffcoate WJ, Game FL, (2006). Diabetes, established renal failure and the risk to the lower limb. Practical Diabetes International. Vol. 23 No. 1: 28-32 <http://www3.interscience.wiley.com/cgi-bin/abstract/112475896/ABSTRACT>

**Responsibility for delivery / implementation**

Health and Social Care Board  
Public Health Agency  
HSC Trusts  
Primary Care

**Quality Dimension**

**Timely**

Early detection and management reduces morbidity and mortality

**Effective**

All treatments will be provided in line with evidence based practice

<b>Performance Indicator:</b>	<b>Data source</b>	<b>Anticipated Performance Level</b>	<b>Date to be achieved by</b>
Percentage of appropriate patients who have had a risk assessment for PVD within the last 12 months	eMed database	50%	March 2010
	Medical notes Podiatry notes	75%	March 2011
	Diamond database LCID PARIS NI Vascular database PAS	95%	March 2012

## SERVICE FRAMEWORK FOR CARDIOVASCULAR HEALTH AND WELL BEING

### **Overarching standard 34:**

All patients with abdominal aortic aneurysm (AAA) should have their medical therapy optimised, particularly, all patients should be on statin therapy. Aneurysm repair should be considered in patients whose aneurysm exceeds 5.5cm in diameter. Patients should be offered open or endovascular repair if possible. All men aged 65 should be offered AAA screening in line with National Screening Committee recommendations.

### **Rationale:**

Early detection by screening is preferred. MASS Lancet 2002

There is evidence of a significant reduction in mortality in men aged 65 to 79 years who undergo screening. There is insufficient evidence to demonstrate benefit in women. (Cochrane Database of Systematic Reviews 2007)

The National Screening Committee has decided that screening by ultrasound examination of the abdomen could be offered to men aged 65 provided that men invited were given clear information about the risks of elective surgery and that steps were taken to create networks of vascular surgical services to allow further specialisation, bigger throughput and therefore lower risk, because of the evidence relating to volume and quality.

Patients with known AAA should have all risk factors identified and treated appropriately. Medical treatment includes statins and antiplatelet therapy.

Smaller aneurysms and aneurysms in people considered unfit for surgery may be managed with medical treatment alone (NICE March 2006). Patients with aneurysms smaller than 5.5cm should be kept under surveillance by ultrasound scan at regular intervals until they reach 5.5cm (UK Small Aneurysm study)

Those with AAA  $\geq$  5.5cm should be investigated by CT scan to determine suitability for endovascular stent-grafting and undergo pre-operative risk-stratification according to the AHA/ACC guidelines (2002).

### **Evidence:**

Multicentre Aneurysm Screening Group, 2002. The Multicentre Aneurysm Screening Study (MASS) into the effect of abdominal aortic aneurysm screening on mortality in men: a randomised controlled trial. The Lancet 360(9345):1531-9

<http://www.ncbi.nlm.nih.gov/pubmed/12443589?dopt=Abstract>

## SERVICE FRAMEWORK FOR CARDIOVASCULAR HEALTH AND WELL BEING

Cosford PA, Leng GC, 2007. Screening for abdominal aortic aneurysm. Cochrane Database of Systematic Reviews 2007, Issue 2  
<http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD002945/frame.html>

National Screening Committee, 2007. National Screening Committee Policy Position on Abdominal Aortic Aneurysm Screening. March 2007  
<http://www.library.nhs.uk/screening/viewresource.aspx?resid=60457>

National Institute for Health and Clinical Excellence (NICE) Stent-graft placement in abdominal aortic aneurysm (2006)  
<http://www.nice.org.uk/Guidance/IPG163>

UK Small Aneurysm Trial Participants, 1998. Mortality results for randomised controlled trial of early elective surgery or ultrasonographic surveillance for small abdominal aortic aneurysms. The Lancet 352:1649-55  
<http://www.ncbi.nlm.nih.gov/pubmed/9853436?dopt=Abstract>

American College of Cardiology/American Heart Association Taskforce, 2002. Guideline Update on perioperative cardiovascular evaluation for noncardiac surgery  
[http://www.americanheart.org/downloadable/heart/1013454973885perioperat\\_e.pdf](http://www.americanheart.org/downloadable/heart/1013454973885perioperat_e.pdf)

### **Responsibility for delivery / implementation**

Health and Social Care Board  
Public Health Agency  
HSC Trusts

**SERVICE FRAMEWORK FOR CARDIOVASCULAR HEALTH AND WELL  
BEING**

**Quality Dimension**

**Safe**

Reduced mortality with elective repair

**Timely**

Early detection is beneficial

**Efficient**

Screening and elective repair reduces mortality

**Effective**

Screening is cost effective

**Patient Centred**

Information should be given to patients about the risks of surgery to allow them to make an informed choice

**SERVICE FRAMEWORK FOR CARDIOVASCULAR HEALTH AND WELL  
BEING**

<b>Performance Indicator:</b>	<b>Data source</b>	<b>Anticipated Performance Level</b>	<b>Date to be achieved by</b>
Post-operative mortality rate following elective AAA repair (stratified by POSSUM)	PAS National Vascular Database	Elective open repair should be within the UK Vascular Database guidelines	March 2010
		Elective AAA repair (EVAR and open) 30 day mortality should be less than 4%	March 2011
		Elective AAA repair post-operative mortality rate should be less than 3.8%	March 2012
		Commence preparatory work for the phased introduction of screening arrangements for AAA	March 2012
Number of elective AAA procedures (EVAR and open)		15 or more (aiming for 60 over three years)	March 2012

## SERVICE FRAMEWORK FOR CARDIOVASCULAR HEALTH AND WELL BEING

### **Overarching standard 35:**

All patients who experience an anterior circulation TIA and carotid artery stenosis of 70-99% should be referred to a vascular surgeon, investigated and have their carotid surgery within 2 weeks of the event. The long term goal should include carotid intervention within 48 hours. (See also Standard 29)

### **Rationale:**

Carotid artery stenosis carries a significant risk of stroke. It can present as a transient ischaemic attack (TIA) or stroke. Symptoms are monocular blindness (amaurosis fugax), speech deficit, unilateral motor and/or sensory symptoms affecting face and limbs. A TIA usually recovers within 30 minutes. All patients with a TIA should be seen at a TIA clinic within 1 week and those with a stroke admitted to hospital.

Investigations should include lipid profile, plasma glucose, ECG, brain scan (CT or MRI), and carotid artery imaging. The gold standard investigation to diagnose carotid stenosis is intra arterial angiography but carotid duplex is non-invasive, safe, widely available, cost effective and sufficiently accurate if performed by a specialist radiologist or ultrasonographer and should be used as first line and is often the only diagnostic investigation.

Symptomatic patients with carotid stenosis 70-99% should have a carotid endarterectomy (CEA) within 2 weeks of symptoms, or more urgently if 2 or more TIAs within a week (CREST guidelines). The latest evidence suggests that intervention should be within 48 hours (Vascular Society). Five CEAs need to be performed to prevent one stroke (North American Symptomatic Carotid Endarterectomy Trial). There is also evidence to support treatment of 50-69% stenosis but this benefit is less pronounced.

CEA is also beneficial in asymptomatic patients less than 75 years old with asymptomatic disease (19 CEAs prevent one stroke, Asymptomatic Carotid Stenosis Trial).

Carotid stenting continues to evolve, however its precise role remains to be defined and therefore it should be restricted to specialist vascular centres with appropriate experience.

All patients should have risk factor management including lipid lowering, blood pressure control, smoking cessation advice and antiplatelet medication.

## SERVICE FRAMEWORK FOR CARDIOVASCULAR HEALTH AND WELL BEING

### **Evidence:**

Clinical Resource Efficiency Support Team (CREST), 2006. Guidelines for investigation and management of transient ischaemic attack

<http://www.crestni.org.uk/tia-guidelines.pdf>

Department of Health, 2007. National Stroke Strategy

[http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_081062](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_081062)

North American Symptomatic Carotid Endarterectomy Trial Collaborators, 1991. Beneficial effect of carotid endarterectomy in symptomatic patients with high-grade carotid stenosis. New England Journal of Medicine 325 (7):445-53

<http://www.ncbi.nlm.nih.gov/pubmed/1852179?dopt=Citation>

MRC Asymptomatic Carotid Stenosis Trial Collaborative Group, 2004.

Prevention of disabling and fatal strokes by successful carotid endarterectomy in patients without recent neurological symptoms: randomised controlled trial.

The Lancet 363(9420):1491-502

<http://www.ncbi.nlm.nih.gov/pubmed/15135594>

National Institute for Health and Clinical Excellence (NICE) Carotid artery stent placement for carotid stenosis (2006)

<http://www.nice.org.uk/Guidance/IPG191>

### **Responsibility for delivery / implementation**

HSC Trusts

### **Quality Dimension**

#### **Safe**

Prompt treatment minimises risk of stroke

#### **Timely**

Timely progression from onset to referral, investigation and treatment

#### **Effective**

Good evidence base for treatment

**SERVICE FRAMEWORK FOR CARDIOVASCULAR HEALTH AND WELL  
BEING**

<b>Performance Indicator:</b>	<b>Data source</b>	<b>Anticipated Performance Level</b>	<b>Date to be achieved by</b>
Percentage of patients with symptomatic carotid stenosis 70-99% who have undergone carotid intervention within 2 weeks of the index event	National Vascular Database	25%	March 2011
	UK Carotid Endarterectomy Audit	40%	March 2012

**Overarching standard 36:**

Patients with leg pain on exertion, suggestive of peripheral arterial disease should have an ankle-brachial pressure index (ABPI) test performed in primary care.

**Rationale:**

Peripheral arterial disease (PAD), and its' commonest symptom leg pain on walking (intermittent claudication), is the commonest presentation of cardiovascular disease. People with PAD have four-fold increased risk of death from heart disease and stroke. Left untreated PAD reduces mobility and quality of life, and can lead to gangrene and limb amputation.

The majority of patients with PAD can be managed in the community. Most of these patients don't need surgical intervention and the important focus is on secondary prevention with an anti-platelet agent, lipid-lowering agent and blood pressure control.

Early detection of PAD enables lifestyle modification and treatment to reduce risk of cardiovascular death. Treatment also reduces risk of limb amputation and improves symptoms, mobility, and quality of life.

All patients with symptoms suggestive of peripheral vascular disease should be placed on a symptomatic peripheral vascular disease register and have relevant lifestyle care interventions, risk factor modification and pharmacotherapy in primary care. Those whose symptoms are not adequately controlled after a minimum of 3 months appropriate management should have an ABPI measurement, and if peripheral vascular disease is confirmed, referred to a vascular surgeon for assessment, including relevant vascular imaging. Patients with critical limb ischaemia (ischaemic rest pain, ischaemic tissue ulceration or necrosis and / or who have ABPI < 0.5) should be referred urgently to a vascular surgeon.

**Evidence:**

TransAtlantic Inter-Society Consensus (TASC II), 2007. Document on Management of Peripheral Arterial Disease <http://www.tasc-2-pad.org/upload/SSRubriqueProduit/Fichier2/597.pdf>

Scottish Intercollegiate Guidelines Network (SIGN) 2006. Diagnosis and management of peripheral arterial disease <http://www.sign.ac.uk/pdf/sign89.pdf>

**SERVICE FRAMEWORK FOR CARDIOVASCULAR HEALTH AND WELL BEING**

<p>American Heart Association (ACC/AHA), 2005. Guidelines for the Management of Patients with Peripheral Arterial Disease (Lower Extremity, Renal, Mesenteric, and Abdominal Aortic)  <a href="http://www.americanheart.org/presenter.jhtml?identifier=3036691">http://www.americanheart.org/presenter.jhtml?identifier=3036691</a></p>			
<p><b>Responsibility for delivery / implementation</b></p>			
<p>Primary care and community podiatrists          Trusts-vascular surgery departments</p>			
<p><b>Quality Dimension</b></p>			
<p><b>Effective</b>          Secondary prevention is effective</p>			
<p><b>Efficient</b>          Simple, inexpensive test-benefits of secondary prevention</p>			
<p><b>Equitable</b>          All primary care organisations should provide ABPI testing</p>			
<p><b>Performance Indicator:</b></p> <p>Percentage of patients in target groups with symptoms suggestive of peripheral arterial disease referred to vascular surgery with a documented ABPI measurement.</p>	<p><b>Data source</b></p> <p>Cardiovascular DES –          Development of At-Risk of Peripheral Vascular Disease Register</p>	<p><b>Anticipated Performance Level</b></p> <p>Establish baseline           Performance levels to be determined once baseline established</p>	<p><b>Date to be achieved by</b></p> <p>March 2011</p>

**Overarching standard 37:**

All patients presenting with features of thoracic aortic dissection should be assessed and referred immediately to an appropriate management centre<sup>1</sup>.

**Rationale:**

This condition is often misdiagnosed.

International data suggests that acute aortic dissection could be as common as abdominal aortic rupture. With no treatment, mortality can approach 50% within 48 hours of initial presentation. This can be significantly reduced with appropriate early management.

Symptoms are present in up to 85% of patients and include some or all of the following:

- Hypertension, searing back pain or interscapular pain;
- Symptoms and signs of acute aortic valve dysfunction;
- Symptoms and signs of aortic branch occlusion e.g. visceral ischemia or limb ischaemia;
- Symptoms and signs of aortic expansion e.g. left recurrent laryngeal nerve palsy or dysphagia;
- Collapse from aortic rupture.

Chest X-rays may show nothing or evidence of a widened mediastinum.

Classic symptoms with a pleural effusion on chest X-ray may be indicative of impending rupture.

The gold standard investigation is CT angiography +/- echocardiographic assessment of valve and myocardial function.

Early control of blood pressure, typically with an intravenous beta blocker, will reduce mortality in most patients and requires observation and assessment in a coronary care or high dependency environment. Urgent cardiac surgery is required for dissections involving the aortic valve or ascending aorta.

Endovascular stents have been highly successful in treating dissections and related conditions of the descending thoracic aorta that don't stabilise quickly with conservative management.

The role of intervention in chronic (> 2 weeks old) aortic dissections depends on a variety of factors revealed by a full cardiovascular and pulmonary assessment.

**Evidence:**

National Institute for Health and Clinical Excellence (NICE) Endovascular stent-graft placement in thoracic aortic aneurysms and dissections (2005)

<http://www.nice.org.uk/Guidance/IPG127>

**SERVICE FRAMEWORK FOR CARDIOVASCULAR HEALTH AND WELL BEING**

<b>Responsibility for delivery / implementation</b>			
Primary Care HSC Trusts-A&E departments, radiology, vascular surgery			
<b>Quality Dimension</b>			
<b>Timely</b> Early detection and management reduces mortality			
<b>Effective</b> Evidence for early control of blood pressure and appropriate early management			
<b>Performance Indicator:</b>	<b>Data source</b>	<b>Anticipated Performance Level</b>	<b>Date to be achieved by</b>
Percentage of patients with thoracic aortic dissection who are referred for treatment to the regional centre within 24 hours of the symptoms developing	PAS diagnosis	15% increase in referred cases from baseline	March 2010
	Audit of post mortems (percentage of cases of thoracic aortic dissection in whom the diagnosis was made before death)	25% increase	March 2011
		35% increase	March 2012

**NOTE:**

<sup>1</sup> Appropriate management centre – for proximal aorta dissections this should be a cardiology/cardiothoracic surgery centre and for distal, arch and descending aorta this should be the regional vascular centre.

## SERVICE FRAMEWORK FOR CARDIOVASCULAR HEALTH AND WELL BEING

### Overarching standard 38:

All patients who are at risk of, or who have developed lymphoedema, should have access to timely information, diagnosis and treatment within the Northern Ireland Lymphoedema Network in accordance with the CREST Lymphoedema Guidelines.

#### Rationale:

There is currently significant inequity in access to regional services for the estimated 2500-3000 people who suffer from lymphoedema in Northern Ireland.

Implementation of the CREST Guidelines for the prevention, diagnosis, assessment and management of lymphoedema will ensure that patients' risk of developing lymphoedema is reduced, improve detection, aid timely diagnosis and guarantee access to appropriate treatment within a dedicated quality lymphoedema service, thus reducing infection (and related admissions, functional impairment and the psychosocial burden of lymphoedema).

#### Evidence:

CREST, 2008, Guidelines for the diagnosis, assessment and treatment of lymphoedema <http://www.crestni.org.uk/index.htm>

CREST, 2005, Cellulitis guidelines

<http://www.crestni.org.uk/publications-show?txtid=4038>

DHSSPS, 2004, Report of the Lymphoedema Services Review Group

<http://www.dhsspsni.gov.uk/lymphoedema.pdf>

National Institute for Health and Clinical Excellence (NICE) Improving Supportive and Palliative Care for Adults with Cancer (2004)

<http://www.nice.org.uk/Guidance/CSGSP>

National Institute for Health and Clinical Excellence (NICE) Improving outcomes in Breast Cancer (1996 and 2002)

<http://www.nice.org.uk/Guidance/CSGBC>

#### Responsibility for delivery / implementation

Lymphoedema Network for Northern Ireland  
HSC Trusts  
Primary Care

## SERVICE FRAMEWORK FOR CARDIOVASCULAR HEALTH AND WELL BEING

### Quality Dimension

#### **Safe, Timely and Patient Centred**

Patients who are identified as being at risk of developing lymphoedema should be given appropriate information regarding prevention to decrease their risk, and ensure early diagnosis and direct access to a lymphoedema service.

#### **Efficient and Effective**

An early diagnosis and timely treatment for all patients should be the priority aim of the service. This has been proven to decrease the overall burden of lymphoedema, both to the patient and the service, and to increase quality of life. Management of the more chronic condition requires more intensive treatment and less overall patient and clinician satisfaction, impacting heavily on clinical resources.

Patients deemed as being at risk of developing lymphoedema as a result of surgical treatment, e.g. regional lymph node dissection, should have baseline measurements recorded prior to and post intervention to aid detection.

#### **Equitable**

Lymphoedema services across the Province should be easily accessible to all patients to ensure early treatment, and prevent deterioration and chronicity. Local access is essential as lymphoedema management is intensive requiring daily treatments for extended periods.

**SERVICE FRAMEWORK FOR CARDIOVASCULAR HEALTH AND WELL  
BEING**

<b>Performance Indicator</b>	<b>Data Source</b>	<b>Anticipated Performance Level</b>	<b>Date to be achieved by</b>
<p>Percentage of patients diagnosed with lymphoedema being offered CDT or modified CDT (intensive phase) and maintenance treatment. (Reasoning behind treatment choice recorded if CDT is modified)</p> <p>(CDT = complex decongestive therapy)</p>	<p>Service audit (Trust and Regional results) – 2009</p> <p>Lymphoedema database</p>	<p>Establish baseline</p> <p>Performance level to be determined once baseline established</p>	<p>March 2011</p>