VASCULAR SOCIETY

THE VASCULAR SOCIETY OF GREAT BRITAIN AND IRELAND

A Best Practice Clinical Care Pathway for **Peripheral Arterial Disease**

November 2018

"Urgent vascular care delivered by integrated vascular networks."

Introduction

The Vascular Society of Great Britain and Ireland (VSGBI) has developed this quality improvement framework (QIF) in response to a recommendation from the NHSE Vascular 'GIRFT' Report (2018).

Peripheral arterial disease (PAD) is common in the UK and carries both the risk of lower limb loss and increased risk of death from heart attack and stroke.

Prevalence data suggests that an 800,000 population should see approximately one presentation with critical limb ischaemia (CLI) and five presentations with acute diabetic foot problems every day.

Supervised exercise therapy, an evidence-based intervention to increase walking distance for patients with intermittent claudication, cannot be accessed in many parts of the UK.

23,000 lower limb revascularization procedures are undertaken each year. These are the most common arterial intervention performed by UK Vascular Surgeons and Interventional Radiologists.

8,000 major amputations are performed in the NHS each year for peripheral arterial disease complications.

The Vascular GIRFT visits found that the delivery of revascularization in CLI is inconsistent across the UK, in provision, length of hospital stays and outcomes.

Universally unacceptable pathway delays to revascularisation were found.

This QIF describes the care pathways, workforce and facilities required to improve outcomes for patients with peripheral arterial disease

- **All patients**, reduced morbidity and mortality from cardio-vascular disease.
- **Intermittent claudication**, sustained improvement in walking distance.
- **Critical limb ischaemia**, restoration of a pain-free and functional lower limb.

All phases of the clinical care pathway are important for patient outcomes.

Implementation of a QIF aims to reduce unwanted variation in service provision

- **Integrated care pathway to include timelines to access vascular care.**
- **In some regions, reorganization, based upon the network model described in the POVS documents, is still needed.**
- **In all regions, improving integrated multi-disciplinary care requires vascular network clinical leads to work with hospital trusts, clinical care groups (CCGs) and other medical specialties across their network areas.**

This framework is aligned with the Vascular GIFT recommendation that networks develop processes to deliver urgent care.

Operating theatre capacity, urgent imaging (CTA/MRA) and involvement of physicians in peri-operative care are priorities for this QIF.

Aims

1. Respond to the Vascular GIRFT challenge to increase early revascularisation for CLI, to reduce amputation rates.

2. Promote better care for patients with peripheral arterial disease, using evidence-based integrated pathways of care.

3. Reduce variation in PAD service provision due to pathways, workforce and facilities.

4. Drive continued improvement through open reporting of procedural outcomes to the National Vascular Registry.

Better engagement of vascular networks with clinical care groups (CCGs)

- Earlier diagnosis of peripheral arterial disease, including CLI.
- Implementation of best medical therapy and life style changes.
- More rapid referral to secondary care.

Improved access to supervised exercise therapy for intermittent claudication

- Within 1 hour's travel time, except in remote rural areas of the UK.

Adequately resourced, appropriately staffed and well organised networks

- Lower limb multi-disciplinary team.
- Provision of acute pain, amputation rehabilitation and end of life care.
- Sufficient vascular beds (at arterial centre) for same day admission or network transfer of patient with CLI.
- Sufficient vascular operating theatre time, including at weekends.
- Sufficient interventional radiology room time, including hybrid theatre.

Written, evidence based, integrated pathways of care

- Equitable access across the vascular network population.
- Decision making by MDT.

Access to timely specialist assessment

- If admitted, review by a consultant vascular surgeon within **14 hours**.
- If referred as outpatient by GP with CLI, electronic referral must be triaged within **2 working days** and patient reviewed by consultant vascular surgeon within **7 days**.

Access to timely cross-sectional imaging

- Admitted patient, CTA or MRA performed within **30 minutes**.
- Non-admitted patient, CTA or MRA performed within **7 days**.

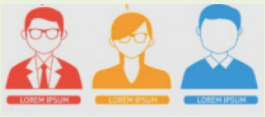
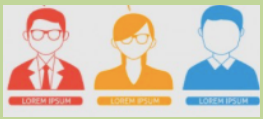
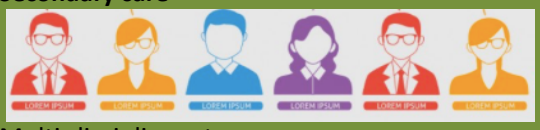
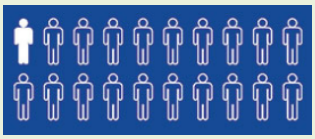
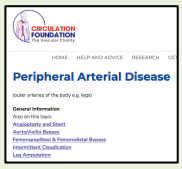
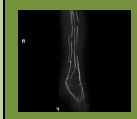
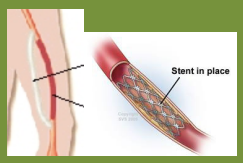
Urgent intervention

- Open surgery performed only in network arterial centre.
- Endovascular procedures may be performed as day-case at networked hospitals, provided multi-disciplinary team input and network governance.
- Antibiotics and deep sepsis drainage and/or debridement within **24 hours**.
- If admitted, revascularisation procedure performed within **5 days**.
- If non-admitted, revascularisation procedure performed within **14 days**.

Procedural outcome reporting to NVR

- Submission of all peripheral arterial disease procedure data (open and endovascular) and major lower limb amputations.

The Best Practice Clinical Care Pathway

Peripheral arterial disease (PAD)	Intermittent claudication (IC)	Critical limb ischaemia (CLI)	
Primary care  GP Nurse Podiatrist	**Interface service**  Physiotherapist Exercise specialist Specialist nurse	**Secondary care**  Multi-disciplinary team	
 **Diagnosis**  **Best medical therapy**  **Information and Education**	 **Supervised exercise therapy**	**Personalised Assessment**  Patient  Limb  Anatomy	**Individualised Revascularisation**  Open and/or Endo **Specialist Services**  Acute pain [1]  Amputee rehabilitation [2]  End of life care [3]
Outcome Reporting to National Vascular Registry VASCULAR SOCIETY The Vascular Society for Great Britain and Ireland			

[1] Control of pain is a priority in critical limb ischaemia and occasionally necessitates admission to hospital.
[2] Only in an emergency, deep infection or non-viable limb, should a major amputation be performed prior to an MDT discussion.
[3] In patients near the end of life the MDT may conclude that palliative care, including appropriate discussion with the patient and family, rather than futile surgery may be indicated.

Asymptomatic PAD

- Early diagnosis of PAD by GPs, nurses and podiatrists improves outcomes when cardio-vascular risk factors are modified.
- Risk factor modification includes lifestyle advice and the prescription of statin medication. Anti-platelet agent will reduce future cardio-vascular events, however, this must be balance against risk of bleeding (Appendix 6).

- Arterial networks should provide education for patients, allied healthcare professionals and GPs in the diagnosis and management of PAD.

Intermittent claudication

- First line, evidence based. management for most patients is best medical therapy and enrolment in a structured supervised exercise therapy programme.
- Failure to respond may lead the clinician and patient to consider Naftidrofuryl Oxalate.

If symptoms warrant revascularization:

- Arterial Duplex and CTA or MRA. *Imaging should include the abdominal aorta to exclude an aneurysm.*
- Review in a **pre-operative assessment clinic** (see below).
- Have adequate opportunities to discuss treatment options, risks and benefits.
- Receive written patient information on treatment options, benefits and risks, recovery from surgery and reducing future cardiovascular risk.

- NHSE and CCGs should work together to commission supervised exercise therapy for their patient populations.

Critical limb ischaemia

Referral

- CCGs must ensure that GPs only refer using an urgent pathway, aligned for example with the acute diabetic foot.
- Patients with immediately threatened limb- i.e. uncontrolled rest pain, deep infection or rapid progression – **same day** telephone referral for admission.
- Other patients – i.e. controlled rest pain, dry necrosis or superficial ulceration – **same day** electronic referral for urgent outpatient review.
- Patients presenting to other specialties should be discussed with the on call vascular surgeon the same day.
- ED doctors should have access to vascular outpatient reviews within **2 working days** at both arterial centre and networked hospitals.

Specialist review

- Patients must be admitted to the arterial centre within **48 hours** from the decision to admit (community) or transfer (network hospital).
- Networks must provide adequate presence at non-arterial hospitals to review patients within **48 hours**.
- Urgent referrals must be triaged within **2 working days** and patient offered an appointment within **7 working days**.

Personalised assessment

- Patients must be reviewed by Consultant Vascular Surgeon within **14 hours** of arrival, unless already assessed by a consultant at a non-arterial centre.
- Non-admitted patient should be seen in a **pre-operative assessment clinic**.
- Patients who are deemed frail should be reviewed by a Consultant Care of the Elderly Physician in a **complex medical assessment clinic**.

- Limb assessment classified using the WIFi score, this can then be used to help predict the risk of limb loss and the benefit of revascularization.
- Patient should have adequate opportunities to discuss treatment options, risks and benefits with Consultant Vascular Surgeon and Consultant Anaesthetist.
- Inpatient CTA or MRA should be available 24/7 and be performed within **30 minutes** of admission.
- Outpatient arterial Duplex, MRA and CTA within **7 days** for patient with CLI.
- Provide written patient information on treatment options, benefits and risks, recovery from surgery and reducing future cardiovascular risk.

Decision making

- Management must be coordinated by a multi-disciplinary Team (see appendix).
- MDT coordination of care includes not only formal meetings but also professional discussions between respective MDT members.
- Treatment decisions will include **Best medical therapy**, medical optimization, risk factor management; **Non-surgical**, medication, smoking cessation, diet and physical exercise; **Revascularization**, open surgery, endovascular therapy or 'hybrid' procedure.
- The decision for revascularization and the type of revascularization should be made by the MDT. It must take into account: frailty; comorbidities; wounds; pattern of disease; availability of vein; and patient choice.
  Different interventions carry different procedural risks and have different longer-term outcomes.
- Ischaemia may be contributory factor to an acute diabetic foot presentation, revascularization should be considered as recommended in NICE Guidelines.
- There must be equity of access to the MDT for clinicians working at the arterial centre and network hospitals.
- The formal MDT meeting must not delay treatment and on occasion will be in retrospect.

MDT Meeting

- Should be weekly, supported with an administrative coordinator, and led by a chairperson.
- Must have adequate facilities including medical records, Information Technology (IT) and Audio-Visual (AV) to ensure optimal decision making.
- Must be job planned for core MDT members to attend regularly.
- Consultants submitting to the MDT are responsible to ensure they provide the required minimum data set to allow decision making.
- MDT decisions should be clearly recorded and be communicated to the patient and their family/friends so that they may be involved with informed decisions about care.

Hospital admission

- Antibiotics prescribed according to local microbiology protocols.
- Screen for infections (i.e. MRSA).
- VTE assessment and prophylaxis according to local guidelines.
- Adequate pain control, opiate analgesics are often required.
- Pressure area assessment and care.
- Nutritional assessment and dietician.

Pre-operative Assessment

Anaesthetic Consultant

- Consultant anaesthetist familiar with vascular surgery.
- Assessment for coronary artery and valvular heart disease, referring for TTE or cardiology opinion where indicated (i.e. angina, heart failure or aortic stenosis).
- Assessment for pulmonary disease, referring for spirometry, pulse oximetry and/or blood gas where indicated.
- Anaemia corrected by iron infusion or blood transfusion.
- Diabetic control optimized, referring for diabetology opinion when necessary.

Care of Elderly Consultant

- Assessment and documentation of functional capacity (i.e. METS).
- Review of medication; continue dual antiplatelet medication, unless agreed by consultant vascular surgeon to convert to single agent 7-10 days before surgery.
- Optimization of co-morbidities.
- Recommend healthy lifestyle; smoking cessation, weight reduction and exercise.
- Falls risk assessment and any necessary precautions.
- Book level 2 (high dependency unit) bed if required.

Wound care

- Patients presenting with deep limb sepsis should have debridement and/or drainage **within 24 hours**.

Revascularisation

- The benefits and durability of an intervention must be carefully balanced against the risks of peri-operative complications, subsequent occlusion and overall prognosis.
- Surgical bypass is less frequently undertaken for intermittent claudication; however, delivering a successful treatment pathway incorporates similar criteria, albeit on a less urgent timeline.
- An appropriate level critical care bed should be available according to preoperative assessment, with emergency access to Level 3 care.
- Urgent procedures should be performed within **5 days of admission**.
- In some instances, patients may present with stable manifestations of disease, such as mummified toes, and initial investigations can be performed urgently in an outpatient setting with revascularization within **14 days**.
- Intervention should not be deferred more than once for non-medical reasons.

Open surgical Revascularisation (Bypass and/or Endarterectomy)	Endovascular Revascularisation (Angioplasty, Atherectomy and/or Stenting)
Organisation ▪ Imaging, MDT, vascular anaesthetic and care of elderly physician assessment prior to intervention. ▪ Informed patient consent. ▪ Should be undertaken on a properly staffed planned 'vascular' operating list during normal working hours. ▪ If performed on urgent ('CEPOD') lists, theatre team should be familiar with vascular surgery, including 'hybrid' procedures. ▪ Consultant should operate, or be present, to supervise trainees. ▪ Consider dual consultant operating if complex bypass. ▪ A consultant anaesthetist or experienced post FRCA trainee should be present (except some local anaesthesia cases). ▪ Patients being for autologous vein bypass should have access to ultrasound vein mapping pre-operatively. ▪ There should be access to cell salvage and blood products. ▪ Use hybrid suite if endovascular adjunct may be required	**Organisation** *As per open surgical revascularsation* ▪ Where possible procedures should be performed as day case, the principle exception being patients with poorly controlled diabetes. ▪ Should be performed in interventional room or hybrid operating theatre ▪ Suitable devices available for procedure and management of complications. ▪ All staff must be trained in radiation protection.

Open surgical Revascularisation (Bypass and/or Endarterectomy)	Endovascular Revascularisation (Angioplasty, Atherectomy and/or Stenting)
Intervention ▪ Clear strategy: inflow, outflow, conduit and potential pitfalls. ▪ Be cognisant of endovascular alternatives / adjuvants. ▪ Vein bypass should be undertaken wherever possible; inadequate vein or exceptional clinical circumstances justify the use of non-autologous or prosthetic alternatives. ▪ Adjunctive procedures such as endarterectomy, angioplasty and stenting must be available at the time of surgery. ▪ Consider whether concurrent debridement of necrotic tissue is required as part of the management strategy	**Intervention** ▪ Clear strategy: plain balloon angioplasty, subintimal angioplasty, drug coated balloon, stent, drug eluting stent, atherectomy, thrombolysis. ▪ Be cognisant of surgical alternatives. ▪ Use of closure devices following agreed local protocols
Post-procedure ▪ Clear plan for anticoagulation and anti-platelet medication. ▪ Appropriate level of post-operative care (level 1-3). ▪ Recognition of the risks of acute renal failure with 24/7 access to renal support. ▪ Vascular nursing expertise to assess limb perfusion and identify complications early. ▪ 24/7 vascular surgical cover with access to emergency theatre. ▪ Daily vascular consultant review until deemed medically fit for discharge. ▪ Appropriate post-operative physiotherapy and allied support therapies, including provision of mobility aids, to facilitate early recovery and safe discharge. ▪ Regular physician input available with medication review (at least twice weekly). ▪ Early duplex assessment of graft flow as per local protocol. ▪ Discharge coordinator to address social and rehabilitation needs. ▪ Clear discharge instructions to patient, GP, physiotherapy and district nurses.	

Recovery

- Access to early vascular review, including for patients repatriated to network hospital or community rehabilitation.
- Suitable orthotics provided for pressure off-loading.
- If diabetic, follow up by **multi-disciplinary diabetic foot team**.
- If open wounds, follow up in a **multi-disciplinary dedicated wound care clinic**.
- Evidence based graft surveillance and anti-thrombotic therapy.
- Long-term interventions to address cardio-vascular risk.

Pain control

- Patients whose rest pain in not controlled within 24 hours of hospital admission should be referred to the acute pain service
- In very frail patients, or patients with unreconstructable distal arterial disease, pain relief alone may be appropriate management.

Major amputation

- If revascularization declined, deemed to be inappropriate or fails, follow amputation pathway or referral to palliative care.
- The 2016 VSGBI Major Amputation QIF describes a high-quality major amputation clinical care pathway.

End of life care

- Patients at the end of life should be considered for palliative care including appropriate discussion with the patient and family, rather than futile surgery.

Monitoring performance

- All Lower Limb Ischaemia Revascularization Procedures (Both Open Surgery and Endovascular Therapy) should be recorded on the National Vascular Registry.
- Written protocol for revascularization should include an assessment of **Technical success**, patency at completion of revascularization; **Patency** at 30 days;
- Longer term follow up, including formal surveillance for lower limb bypass grafts.
- All LLI Revascularizations which have an ipsilateral Lower Limb Amputation should be recorded on the NVR to allow audit of Amputation-Free Survival.
- Vascular Surgeons should have Supporting Professional Activity (SPA) contracted time to Monitor and Audit Outcomes and Vascular MDT should have Appointed Leads for Safety & Governance to Monitor and Audit Outcomes.
- Information produced by the NVR should be reviewed to determine where local improvements can be made.

The QIF targets set are deliberately challenging. Vascular surgery clinical networks that cannot meet the requirements should engage actively with service managers and commissioners to implement the changes required to develop safe and effective services that meet the local needs of their patients with vascular diseases.

Appendices

1. Summary of guidelines reviewed for this QIF

Vascular Surgery GIRFT Programme National Specialty Report, NHS England 2018

- A Lower Limb Ischaemia Quality Improvement Framework (LLQIF) to improve revascularization rate and reduce amputation, indicating pathway timelines.
- Providers to follow the requirements of the new LLQIF, and NHSE Specialised Commissioning to consider reflecting the QIF in service specification.
- GIRFT regional hubs to discuss the provision of urgent outpatients' appointments for non-diabetic ischaemic foot with providers and CCG's to enable early referral and thus identification of the need for revascularization.

The Provision of Services for Patients with Vascular Disease 2018, VSGBI 2018

- Vascular Surgery needs of regional populations should be delivered through managed vascular surgery clinical networks organized around central inpatient arterial hubs supporting regional non-arterial hospitals and communities and providing standards of care as recommended by the Vascular Society of Great Britain & Ireland[1] and National Service Specifications.
- This in turn should deliver improved early decision-making capability and access to early assessment, diagnostics and treatment and prioritized by degree of urgency.
- All vascular surgery clinical networks should have a written pathway for the management of intermittent claudication and critical limb ischaemia.

National Institute of Health and Clinical Excellence and International Societies

- NICE, Peripheral arterial disease: diagnosis and management Clinical guideline Published: 8 August 2012. nice.org.uk/guidance/cg147.
- NICE, Diabetic foot problems: prevention and management NICE guideline Published: 26 August 2015. nice.org.uk/guidance/ng19.
- ESVS
- SVS
- GVG (In draft)

2. Constituents of the Multi-Disciplinary team

Patients with limb ischemia also have significant co-morbidities. are often nutritionally deficient and/or frail and there is a high risk of complications. A well-prepared patient has a higher chance of a successful intervention with return to independent mobility and living. The risk of hospital-acquired complications and readmission for a co-morbidity are reduced.

- Care of the elderly physicians have an important role in the management of frail patients, they can help inform patients, provide insight into likely outcomes and manage medical co-morbidities peri-operatively.

- Anesthetists with a vascular interest are skilled at assessing patients function and risk from major vascular surgery.

- Specialist nurses can address risk factors, such as smoking, and engage patients in considering other lifestyle changes. They can explore patients concerns and understanding of planned procedures.

- Physiotherapy and occupational therapy are important pre- and post-operatively in reducing complications and return of useful function.

- Well trained vascular ward nurses will detect complications early.

Core	Input available from
Vascular Surgeon (Lead) Care of the Elderly Physician Interventional Radiologist Vascular Anaesthetist Vascular Nurse Specialist Vascular Technologist Specialist vascular ward nurses Physiotherapists Occupational therapists Network Manager MDT coordinator Waiting list coordinator (or equivalent) Discharge coordinator	Acute pain team Acute medicine Cardiology Renal, including access to dialysis Endocrinology Podiatry Microbiology / Infectious Diseases Nutrition Team Rehabilitation Physician Tissue Viability Nurse Diabetes Specialist Nurse Amputation Councillor Palliative Care Nurse Palliative Care Consultant

3. Timescales

Descriptor	Timescale	Source
Referral to vascular surgery from primary care	Same day	
Triage of CLI referrals by vascular network	One working day	
First outpatient review Deep wound or foot sepsis Other CLI referrals	 <=48 hours <=2 weeks	
Admission CLI with tissue loss	<48 hours (from decision to admit)	StAMP POVS 2018
Review by Vascular Surgeon	<14 hours urgent admission <24 hours elective admission	NHS England NCEPOD
Admitted, imaging (CTA or MRA) for Revascularisation CLI – i.e. patient with tissue loss	<=48 hours from Admission	StAMP
Non-admitted, imaging (CTA or MRA) for Revascularisation CLI – i.e. patient with rest pain alone	<=7 days from presentation	POVS 2018
Admitted, primary Revascularisation Procedure CLI with tissue loss	<=5 days	POVS 2018
Non-admitted, Primary Revascularisation Procedure CLI without tissue loss	<14 days	POVS 2018

4. Local Evaluation of Performance

Metric	Target
Admission to Clinical Network Arterial Hub	100%
Vascular Multi-Disciplinary Team Assessment Patient	100%
Vascular Multi-Disciplinary Team Attendance Consultant	75%
Vascular Imaging Pre-Revascularisation	100%
Anaesthetic Pre-Assessment	100%
Planned (Elective) Vascular Procedure	75%
Consultant Vascular Specialist at Procedure	100%
Consultant Anaesthetist (if General Anaesthetic) at Procedure	100%
VTE Risk Assessment	100%
Antibiotic Prophylaxis Assessment	100%

Revascularisation Assessment procedural Success	100%
NVR Submission	100%

5. Abbreviations explained

ABI	Ankle brachial index, a measure of lower limb arterial perfusion. If the arteries are incompressible then a toe pressure (TP) or transcutaneous oxygen pressure (TcPO2) are used to calculate the ischaemia component of the WIfI score.
CCG	Clinical care group responsible for commissioning community peripheral arterial disease management and specialist multi-disciplinary diabetic foot clinics.
CLI	Critical limb ischaemia used to describe impaired lower limb blood supply due to atheromatous disease progression that threatens the viability of the limb. Global vascular guidelines use the terms 'Chronic limb-threatening ischaemia, CLTI' and European Society of Vascular Surgery 'LEAD, Lower extremity arterial disease'
CTA	computed tomography angiography
ED	Emergency department
TTE	Transthoracic echocardiogram
GIRFT	'Get it Right First Time'
IC	intermittent claudication
IR	Interventional radiology
MDT	Multi-disciplinary team
MET	Metabolic equivalent of task
MRA	magnetic resonance angiography
MRSA	Methicillin resistant staphylococcus aureus
NHSE	National Health Service in England, responsible for commissioning specialist vascular networks. Scot? NI?
NVR	National Vascular Registry,
PAD	Peripheral arterial disease, occlusive atheromatous disease of the lower limb arteries leading to symptoms of intermittent claudication, delayed wound or ulcer healing and critical limb ischaemia.
POVS	Provision of Vascular Services, Vascular Society guidance on service delivery.
QIF	Quality Improvement Framework,
UK	United Kingdom, in healthcare terms NHS England and devolved NHS in Scotland, Wales and Northern Ireland
VSGBI	Vascular Society of Great Britain and Ireland.
VTE	Venous thrombo-embolism, an important cause of mortality, from pulmonary embolus, and morbidity, from lower limb venous thrombosis, in acute surgical patients.
WIfI	SVS Threatened Lower Limb Extremity Classification of chronic limb threatening ischaemia incorporating severity of wounds (0-3), ischaemia (0-3) and foot infection. (0-3).

6. **Best Medical Management**

A Best Practice Clinical Care Pathway for Peripheral Arterial Disease

Best Medical Therapy

Guidelines for risk factor modification in peripheral arterial disease fall in line with standard secondary prevention strategies for other cardiovascular disorders. In depth guidance for secondary prevention measures has been issued by the National institute of Clinical Excellence and is summarized in a range of NICE-CKS guideline documents.

Risk factor modification

Smoking cessation reduces the risk of cardiovascular events and is effective in improving claudication distance. Forms of behavioural counselling in combination with medications such as varenicline are the most effective smoking cessation strategies.
[https://cks.nice.org.uk/smoking-cessation]

Antiplatelet agents - all patients should receive secondary prevention in the form of clopidogrel 75mg once daily, unless contraindicated or intolerant. The second line alternative is low dose aspirin - 75mg od.
[https://cks.nice.org.uk/antiplatelet-treatment]

Lipid modification – All patients with peripheral arterial disease should be offered secondary prevention for cardiovascular events with high intensity statin treatment, without the need for a formal assessment of cardiovascular risk.
e.g. atorvastatin 80mg od, if tolerated.

Patients should be counselled about the small risk of side effects including muscle pains.
[The most serious adverse effects of statins are myopathy and rhabdomyolysis. Estimated incidence: 5 cases per 100,000 person years; 1.6 cases per 100,000 person years, respectively]
[*https://www.medicines.org.uk/emc/medicine/1201*].

Prior to initiation, identify and treat causes of secondary hyperlipidaemia
e.g. excessive alcohol intake, uncontrolled diabetes, hypothyroidism, liver disease, nephrotic syndrome

NICE recommend baseline blood tests including a full lipid profile (cholesterol, HDL, Non-HDL, TG and CK, LFTS, renal function, liver function and HbA1c)
Check cholesterol at 3/12 - aiming for a reduction in non- HDL-cholesterol of >40%. Check LFT at 3 and 12 months. Thereafter, yearly monitoring to check lipids and review for side effects of statins.
[https://cks.nice.org.uk/lipid-modification-cvd-prevention]

Diabetes - Aim for HbA1c of <48mmol. Manage type 1 and type 2 diabetes according to National guidelines.
[https://cks.nice.org.uk/diabetes-type-1; https://cks.nice.org.uk/diabetes-type-2]

Hypertension - a blood pressure of BP >140/90 in the clinic, or an average ambulatory blood pressure recording of >135/85 should prompt further assessment and treatment. [in patients >80, aim for a blood pressure of <150/90]

If blood pressure is elevated - recommend smoking cessation and reduce alcohol and caffeine intake. Exercise programmes, relaxation therapy and reduced salt intake are effective lifestyle approaches to lowering blood pressure.

Consider causes of secondary hypertension and treat as appropriate.
See NICE CKS for a summary of common causes of secondary hypertension

First choice medication in patients aged < 55 is an angiotensin-converting enzyme inhibitor (ACEi) or angiotensin II receptor blocker (ARB) if tolerated. First line for older adults, or Afro-Caribbean patients is a calcium channel blocker (dihydropyridine type - e.g. amlodipine). If intolerant or in need of second or third line agents, it would be appropriate to consider a thiazide diuretic such as indapamide.

Severe or resistant hypertension should prompt consideration of referral to specialist hypertension services.
Treatment of hypertension in pregnant women or patients under aged 40 should be guided by specialist hypertension services.
[https://cks.nice.org.uk/hypertension-not-diabetic]

Diet, weight and exercise - if Body Mass Index is >25, consider referral for dietary advice and provide a goal for weight loss.
Diet should broadly be in line with healthy eating recommendations, i.e. five portions of fruit and vegetables each day, meals based on starchy foods such as pasta, bread, rice or potatoes, moderate amounts of dairy products and protein-rich foods.
Reduce foods high in fat, sugar and salt.
[https://cks.nice.org.uk/obesity#!scenario]

Intermittent claudication - symptom improvement.

Supervised exercise therapy has been shown to provide improvement in claudication symptoms. Exercise therapies may also be beneficial in the management of other cardiovascular risk factors, such as body weight and hypertension.

Naftidrofuryl Oxalate. NICE have approved the use of the vasoactive agent naftidrofuryl oxalate for patients with intermittent claudication. It may be used when supervised exercise therapy fails to result in satisfactory improvement of claudication symptoms and the patient prefers not to be referred for consideration of angioplasty or bypass surgery. Efficacy should be assessed after 3-6 months and if there is no benefit, it should be ceased.
[https://cks.nice.org.uk/peripheral-arterial-disease#!scenario:2]

1. ABPI Medicines Compendium (2013) *Summary of product characteristics for Zocor 10mg, 20mg, 40mg and 80mg film-coated tablets.* Electronic Medicines Compendium *Datapharm Communications Ltd*. www.medicines.org.uk
2. *NICE Clinical Knowledge Summaries: peripheral arterial disease. https://cks.nice.org.uk/peripheral-arterial-disease*
3. *NICE Guideline – Peripheral arterial disease: diagnosis and management. https://www.nice.org.uk/guidance/cg147*
4. *Peripheral Artery Disease. Morley, R et al.* BMJ 2018;360:j5842. *https://www.bmj.com/content/360/bmj.j5842*

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