



## Peripheral arterial disease (PAD)

[NICE CG147; 2018 update](#)

This guideline update covers diagnosing and managing peripheral arterial disease (PAD) in people aged ≥18 years.

**PAD**  
**CVD**

### Definition of terms

peripheral arterial disease  
cardiovascular disease

### Assessment and diagnosis

- ◆ Assess people for the presence of PAD if they:
  - have symptoms suggestive of PAD, **OR**
  - have diabetes, non-healing wounds on the legs or feet or unexplained leg pain, **OR**
  - are being considered for interventions to the leg or foot, **OR**
  - need to use compression hosiery.
- ◆ Assess people with suspected PAD by:
  - asking about the presence and severity of possible symptoms of intermittent claudication and critical limb ischaemia,
  - examining the legs and feet for evidence of critical limb ischaemia, e.g. ulceration,
  - examining the femoral, popliteal and foot pulses,
  - measuring the ankle brachial pressure index (see [Box 1](#)).

### Symptoms of PAD

- ◆ The most common initial symptom of PAD is leg pain while walking, known as intermittent claudication.
- ◆ Critical limb ischaemia is a severe manifestation of peripheral arterial disease, and is characterised by severely diminished circulation, ischaemic pain, ulceration, tissue loss and/or gangrene.

#### Box 1

#### How to measure ankle brachial pressure

- ◆ the person should be resting and supine if possible,
- ◆ record systolic blood pressure with an appropriately sized cuff in both arms and in the posterior tibial, dorsalis pedis and, where possible, peroneal arteries,
- ◆ take measurements manually using a doppler probe of suitable frequency in preference to an automated system,
- ◆ document the nature of the doppler ultrasound signals in the foot arteries,
- ◆ calculate the index in each leg by dividing the highest ankle pressure by the highest arm pressure.

### Diagnosing PAD in people with diabetes

- ◆ **Do NOT** exclude a diagnosis of PAD in people with diabetes based on a normal or raised ankle brachial pressure index alone.
- ◆ **Do NOT** use pulse oximetry for diagnosing PAD in people with diabetes.

**Imaging for revascularisation** – see [NICE Pathway](#)

### Treatment and Management

#### Secondary prevention of CVD in people with PAD

- ◆ Offer all people with PAD information, advice, support and treatment regarding secondary prevention of CVD, in line with published NICE guidance on:
  - smoking cessation,
  - diet, weight management and exercise,
  - lipid modification and statin therapy,
  - the prevention, diagnosis and management of diabetes and high blood pressure,
  - antiplatelet therapy.
 See [NICE Pathway](#)
- ◆ Also see [NICE TA210: Clopidogrel and modified release dipyridamole for the prevention of occlusive vascular events](#):
- ◆ Clopidogrel is recommended as an option to prevent occlusive vascular events:
  - for people who have had an ischaemic stroke or who have PAD or multivascular disease.
- ◆ Treatment with clopidogrel to prevent occlusive vascular events should be started with the least costly licensed preparation.
- ◆ For more information see NICE recommendations on [CVD prevention](#) and [familial hypercholesterolaemia](#).

#### Intermittent claudication

##### Supervised exercise programme

- ◆ Offer a supervised exercise programme to all people with intermittent claudication.
- ◆ Consider providing a supervised exercise programme for people with intermittent claudication which involves:
  - two hours of supervised exercise a week for a 3-month period,
  - encouraging people to exercise to the point of maximal pain.

#### Revascularisation

- ◆ Offer angioplasty for treating people with intermittent claudication only when:
  - advice on the benefits of modifying risk factors has been reinforced, **AND**
  - a supervised exercise programme has not led to a satisfactory improvement in symptoms, **AND**
  - imaging has confirmed that angioplasty is suitable for the person.
- ◆ **Do NOT** offer primary stent placement for treating people with intermittent claudication caused by aorto-iliac disease (except complete occlusion) or femoro-popliteal disease.
- ◆ Consider primary stent placement for treating people with intermittent claudication caused by complete aorto-iliac occlusion, rather than stenosis.
- ◆ Use bare metal stents when stenting is used for treating people with intermittent claudication.

Please go to [www.nice.org.uk/](http://www.nice.org.uk/) to check for any recent updates to this guideline.

## PAD.....continued

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**Bypass surgery and graft types**

- ◆ Offer bypass surgery for treating people with severe lifestyle-limiting intermittent claudication only when:
  - angioplasty has been unsuccessful or is unsuitable, **AND**
  - imaging has confirmed that bypass surgery is appropriate for the person.
- ◆ Use an autologous vein whenever possible for people with intermittent claudication having infra-inguinal bypass surgery.

**Critical limb ischaemia**

- ◆ Ensure that all people with critical limb ischaemia are assessed by a vascular multidisciplinary team before treatment decisions are made.

**Revascularisation**

- ◆ Offer angioplasty or bypass surgery for treating people with critical limb ischaemia who require revascularisation, taking into account factors including:
  - comorbidities,
  - pattern of disease,
  - availability of a vein,
  - patient preference.
- ◆ **Do NOT** offer primary stent placement for treating people with critical limb ischaemia caused by aorto-iliac disease (except complete occlusion) or femoro-popliteal disease.
- ◆ Consider primary stent placement for treating people with critical limb ischaemia caused by complete aorto-iliac occlusion, rather than stenosis.
- ◆ Use bare metal stents when stenting is used for treating people with critical limb ischaemia.
- ◆ Use an autologous vein whenever possible for people with critical limb ischaemia having infra-inguinal bypass surgery.

**Major amputation**

- ◆ **Do NOT** offer major amputation to people with critical limb ischaemia unless all options for revascularisation have been considered by a vascular multidisciplinary team.

**Information and support**

- ◆ Offer all people oral and written information about their condition. Discuss it with them so they can share decision-making, and understand the course of the disease and what they can do to help prevent disease progression, including:
  - the causes of their symptoms and severity of their disease,
  - the risks of limb loss and/or cardiovascular events associated with PAD,
  - the key modifiable risk factors, such as smoking, control of diabetes, hyperlipidaemia, diet, body weight and exercise,
  - how to manage pain,
  - all relevant treatment options, including risks and benefits of each,
  - how to access support for dealing with depression and anxiety.
- ◆ Ensure that information, tailored to the individual, is available at diagnosis and subsequently as required, to allow people to make decisions throughout the course of their treatment

**Pharmacological Treatment****Intermittent claudication**

- ◆ Consider naftidrofuryl oxalate for treating people with intermittent claudication, starting with the least costly preparation, only when:
  - supervised exercise has not led to satisfactory improvement, **AND**
  - the person prefers not to be referred for consideration of angioplasty or bypass surgery.
- ◆ Review progress after 3 to 6 months and discontinue naftidrofuryl oxalate if there has been no symptomatic benefit.
- ◆ Cilostazol, pentoxifylline and inositol nicotinate are **NOT** recommended for the treatment of intermittent claudication in people with PAD.
- ◆ People currently receiving cilostazol, pentoxifylline and inositol nicotinate should have the option to continue treatment until they and their clinicians consider it appropriate to stop.

**Critical limb ischaemia**

- ◆ Offer paracetamol, and either weak or strong opioids depending on the severity of pain, to people with critical limb ischaemic pain.
- ◆ Offer drugs such as laxatives and anti-emetics to manage the adverse effects of strong opioids, in line with the person's needs and preferences.
- ◆ Refer people with critical limb ischaemic pain to a specialist pain management service if any of the following apply:
  - their pain is not adequately controlled and revascularisation is inappropriate or impossible,
  - ongoing high doses of opioids are required for pain control,
  - pain persists after revascularisation or amputation.
- ◆ **Do NOT** offer chemical sympathectomy to people with critical limb ischaemic pain, except in the context of a clinical trial.

**Resources**

- ◆ NICE has written information for the public on [peripheral arterial disease](#).

**Recommendations** – wording used such as 'offer' and 'consider' denote the [strength of the recommendation](#).  
**Drug recommendations** – the guideline assumes that prescribers will use a drug's [Summary of Product Characteristics \(SPC\)](#) to inform treatment decisions.

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**NICE Key Therapeutic Topics 2018 Update**

**Key therapeutic topics** summarise the evidence-base on topics identified to support medicines optimisation, but are not formal NICE guidance. The 2018 update has retained 14 topics from 2017.

For individual topics go to [www.nice.org.uk/About/What-we-do/Our-Programmes/NICE-Advice/Key-therapeutic-topics](http://www.nice.org.uk/About/What-we-do/Our-Programmes/NICE-Advice/Key-therapeutic-topics)

**NEW:** Chemotherapy dose standardisation

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