

# Lower limb peripheral arterial disease overview

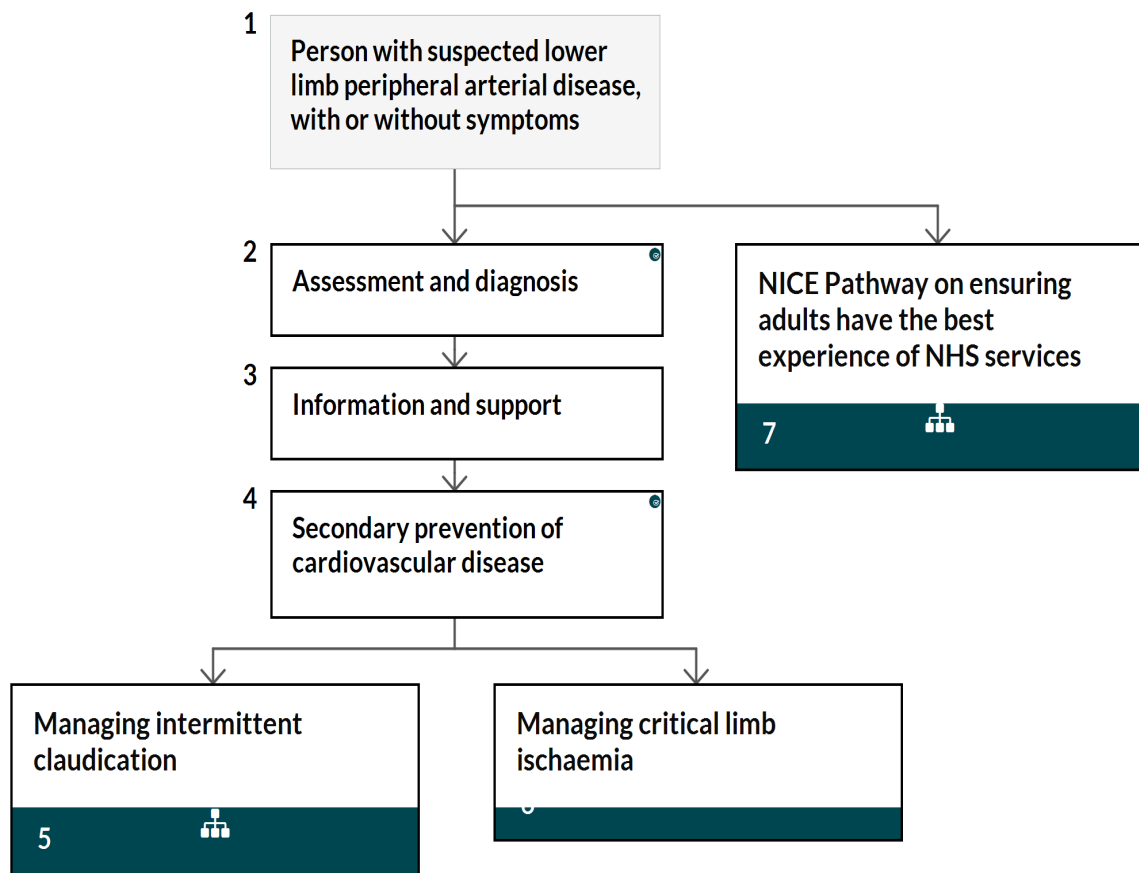
NICE Pathways bring together everything NICE says on a topic in an interactive flowchart. NICE Pathways are interactive and designed to be used online.

They are updated regularly as new NICE guidance is published. To view the latest version of this NICE Pathway see:

<http://pathways.nice.org.uk/pathways/lower-limb-peripheral-arterial-disease>

NICE Pathway last updated: 28 September 2020

This document contains a single flowchart and uses numbering to link the boxes to the associated recommendations.



## 1 Person with suspected lower limb peripheral arterial disease, with or without symptoms

No additional information

## 2 Assessment and diagnosis

Assess people for the presence of peripheral arterial disease if they:

- have symptoms suggestive of peripheral arterial disease **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 peripheral arterial disease 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, for example ulceration
- examining the femoral, popliteal and foot pulses
- measuring the ankle brachial pressure index (see below).

Measure the ankle brachial pressure index in the following way:

- 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.

### People with diabetes

Do not exclude a diagnosis of peripheral arterial disease in people with diabetes based on a normal or raised ankle brachial pressure index alone.

Do not use pulse oximetry for diagnosing peripheral arterial disease in people with diabetes.

See [why we made the recommendations on diagnosis in people with diabetes \[See page 8\]](#).

## Quality standards

The following quality statement is relevant to this part of the interactive flowchart.

1. Identification and assessment of peripheral arterial disease

### 3 Information and support

Offer all people with peripheral arterial disease 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. Information should include:

- the causes of their symptoms and the severity of their disease
- the risks of limb loss and/or cardiovascular events associated with peripheral arterial disease
- the key modifiable risk factors, such as smoking, control of diabetes, hyperlipidaemia, diet, body weight and exercise (see also information about [secondary prevention of cardiovascular disease \[See page 4\]](#))
- how to manage pain
- all relevant treatment options, including the risks and benefits of each
- how they can access support for dealing with depression and anxiety.

Ensure that information, tailored to the individual needs of the person, is available at diagnosis and subsequently as required, to allow people to make decisions throughout the course of their treatment.

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

NICE has produced guidance on the components of good patient experience in adult NHS services. Follow NICE's recommendations on [patient experience in adult NHS services](#).

### 4 Secondary prevention of cardiovascular disease

Offer all people with peripheral arterial disease information, advice, support and treatment regarding the secondary prevention of cardiovascular disease, in line with published NICE guidance on:

- [smoking cessation](#)
- [diet](#), weight management (see [obesity](#)) and exercise (see [physical activity](#))
- [lipid modification and statin therapy](#)
- the prevention, diagnosis and management of [diabetes](#)
- the prevention, diagnosis and management of [high blood pressure](#)
- antiplatelet therapy (see [antiplatelets and anticoagulants](#) in NICE's guidance on myocardial infarction: rehabilitation and preventing further cardiovascular disease).

For more information see NICE's recommendations on [cardiovascular disease prevention](#) and [familial hypercholesterolaemia](#).

## Rivaroxaban

The following recommendations are from NICE technology appraisal guidance on [rivaroxaban for preventing atherothrombotic events in people with coronary or peripheral artery disease](#).

Rivaroxaban plus aspirin is recommended within its marketing authorisation, as an option for preventing atherothrombotic events in adults with coronary artery disease or symptomatic peripheral artery disease who are at high risk of ischaemic events.

For people with coronary artery disease, high risk of ischaemic events is defined as :

- aged 65 or over, or
- atherosclerosis in at least 2 vascular territories (such as coronary, cerebrovascular, or peripheral arteries), or
- 2 or more of the following risk factors:
  - current smoking
  - diabetes
  - kidney dysfunction with an estimated glomerular filtration rate (eGFR) of less than 60 ml/min (note that rivaroxaban is contraindicated if the eGFR is less than 15 ml/min)
  - heart failure
  - previous non-lacunar ischaemic stroke.

Assess the person's risk of bleeding before considering rivaroxaban. Treatment should only be started after an informed discussion with them about the risks and benefits of rivaroxaban, weighing up the risk of atherothrombotic events against the risk of bleeding. The risks and benefits of continuing treatment with rivaroxaban should be regularly reviewed.

See [why we made the recommendations on rivaroxaban](#).

NICE has written information for the public on [rivaroxaban](#).

### **Clopidogrel and modified-release dipyridamole**

The following recommendations are an extract from NICE technology appraisal guidance on [clopidogrel and modified-release dipyridamole for the prevention of occlusive vascular events](#).

This guidance applies to people who have had an occlusive vascular event, or who have established peripheral arterial disease.

Clopidogrel is recommended as an option to prevent occlusive vascular events:

- for people who have had an ischaemic stroke or who have peripheral arterial disease or multivascular disease.

Treatment with clopidogrel to prevent occlusive vascular events should be started with the least costly licensed preparation.

NICE has written information for the public on [clopidogrel and modified-release dipyridamole](#).

### **Quality standards**

The following quality statement is relevant to this part of the interactive flowchart.

2. Comorbidity assessment

#### **5 Managing intermittent claudication**

See [Lower limb peripheral arterial disease / Managing intermittent claudication in people with peripheral arterial disease](#)

#### **6 Managing critical limb ischaemia**

See [Lower limb peripheral arterial disease / Managing critical limb ischaemia in people with peripheral arterial disease](#)

#### **7 NICE Pathway on ensuring adults have the best experience of NHS**

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**services**

[See Patient experience in adult NHS services](#)

## Diagnosis in people with diabetes

Evidence showed that doppler ankle brachial pressure index below an agreed cut-off increased the probability of diagnosing peripheral arterial disease. However, people with diabetes and peripheral arterial disease may have a normal or raised index because of hardening of the arteries. The committee agreed that it was important to highlight this so that healthcare professionals do not exclude peripheral arterial disease in people with diabetes based on a normal or raised ankle brachial pressure index alone.

There was a lack of evidence on the use of pulse oximetry for diagnosing peripheral arterial disease in people with diabetes. The committee noted that a universal cut-off point had not been established. This could lead to variation in the interpretation of results. It was also noted that pulse oximetry is rarely used in clinical practice for assessing peripheral arterial disease and there was general clinical agreement that it is not a useful test in this context. Therefore, the committee recommended against the use of pulse oximetry for this purpose.

There was not enough evidence on the use of other tests (doppler waveform analysis and toe brachial index) for diagnosing peripheral arterial disease in people with diabetes. However, the committee agreed it was not appropriate to make recommendations against the use of these tests, as there were good theoretical arguments as to why these tests might provide useful diagnostic value. The committee therefore agreed to make research recommendations to inform future practice and any further update of this guidance.

Full details of the evidence and the committee's discussion are in [evidence review A: determining the diagnosis and severity of peripheral arterial disease in people with diabetes](#).

### How the recommendations might affect practice

The new recommendations should improve the holistic assessment of peripheral arterial disease in people with diabetes. This is important because this group has a higher risk of cardiovascular events and foot problems such as diabetic neuropathy, foot ulcer and limb loss. The recommendations clarify the use of ankle brachial pressure index and highlight the importance of interpreting pulse measurements in relation to clinical context, including symptoms.

## Sources

[Peripheral arterial disease: diagnosis and management](#) (2012 updated 2018) NICE guideline



CG147

Rivaroxaban for preventing atherothrombotic events in people with coronary or peripheral artery disease (2019) NICE technology appraisal guidance 607

Clopidogrel and modified-release dipyridamole for the prevention of occlusive vascular events (2010) NICE technology appraisal guidance 210

## Your responsibility

### Guidelines

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

### Technology appraisals

The recommendations in this interactive flowchart represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, health

professionals are expected to take these recommendations fully into account, alongside the individual needs, preferences and values of their patients. The application of the recommendations in this interactive flowchart is at the discretion of health professionals and their individual patients and do not override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or their carer or guardian.

Commissioners and/or providers have a responsibility to provide the funding required to enable the recommendations to be applied when individual health professionals and their patients wish to use it, in accordance with the NHS Constitution. They should do so in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

### **Medical technologies guidance, diagnostics guidance and interventional procedures guidance**

The recommendations in this interactive flowchart represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, healthcare professionals are expected to take these recommendations fully into account. However, the interactive flowchart does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

Commissioners and/or providers have a responsibility to implement the recommendations, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity, and foster good relations. Nothing in this interactive flowchart should be interpreted in a way that would be inconsistent with compliance with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.