

# Varicose veins: diagnosis and management

Clinical guideline

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[www.nice.org.uk/guidance/cg168](https://www.nice.org.uk/guidance/cg168)

## Your responsibility

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.

All problems (adverse events) related to a medicine or medical device used for treatment or in a procedure should be reported to the Medicines and Healthcare products Regulatory Agency using the [Yellow Card Scheme](#).

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.

# Contents

Overview .....	4
Who is it for? .....	4
Introduction .....	5
Key priorities for implementation .....	6
Referral to a vascular service.....	6
Assessment and treatment in a vascular service .....	6
Non-interventional treatment .....	7
Recommendations.....	8
1.1 Information for people with varicose veins.....	8
1.2 Referral to a vascular service.....	9
1.3 Assessment and treatment in a vascular service.....	10
1.4 Management during pregnancy .....	11
Recommendations for research .....	12
1 Natural history of varicose veins .....	12
2 Compression as a management option .....	12
3 Compression after interventional treatment .....	13
4 Truncal treatment with or without concurrent tributary treatment .....	14
5 Optimal interventional and conservative treatments at different stages of disease .....	14
Finding more information and committee details.....	16

This guideline is the basis of QS67.

## Overview

This guideline covers diagnosing and managing varicose veins in people aged 18 and over. It aims to ensure that people understand the options for treating varicose veins and that healthcare professionals know when to refer people for specialist assessment and treatment.

## Who is it for?

- Healthcare professionals
- Commissioners and providers
- People with varicose veins and their families and carers

# Introduction

Varicose veins are dilated, often palpable subcutaneous veins with reversed blood flow. They are most commonly found in the legs. Estimates of the prevalence of varicose veins vary. Visible varicose veins in the lower limbs are estimated to affect at least a third of the population. Risk factors for developing varicose veins are unclear, although prevalence rises with age and they often develop during pregnancy.

In some people varicose veins are asymptomatic or cause only mild symptoms, but in others they cause pain, aching or itching and can have a significant effect on their quality of life. Varicose veins may become more severe over time and can lead to complications such as changes in skin pigmentation, bleeding or venous ulceration. It is not known which people will develop more severe disease but it is estimated that 3–6% of people who have varicose veins in their lifetime will develop venous ulcers.

There are several options for the management of varicose veins, including:

- advice and reassurance
- interventional treatments (endothermal ablation, foam sclerotherapy and surgery)
- compression hosiery.

In 2009/10 there were 35,659 varicose veins procedures carried out in the NHS. There is no definitive system for identifying which people will benefit the most from interventional treatment and no established framework within the NHS for the diagnosis and management of varicose veins. This has resulted in wide regional variations in the management of varicose veins in the UK. This guideline was developed with the aim of giving healthcare professionals guidance on the diagnosis and management of varicose veins in the legs, in order to improve patient care and minimise disparities in care across the UK.

The guideline will assume that prescribers will use a drug's summary of product characteristics to inform decisions made with individual patients.

## Key priorities for implementation

The following recommendations have been identified as priorities for implementation.

### Referral to a vascular service

- Refer people to a vascular service if they have any of the following.
- Symptomatic primary or symptomatic recurrent varicose veins.
- Lower-limb skin changes, such as pigmentation or eczema, thought to be caused by chronic venous insufficiency.
- Superficial vein thrombosis (characterised by the appearance of hard, painful veins) and suspected venous incompetence.
- A venous leg ulcer (a break in the skin below the knee that has not healed within 2 weeks).
- A healed venous leg ulcer.

A vascular service is a team of healthcare professionals who have the skills to undertake a full clinical and duplex ultrasound assessment and provide a full range of treatment. Symptomatic veins are veins found in association with troublesome lower limb symptoms (typically pain, aching, discomfort, swelling, heaviness and itching).

### Assessment and treatment in a vascular service

#### Assessment

- Use duplex ultrasound to confirm the diagnosis of varicose veins and the extent of truncal reflux, and to plan treatment for people with suspected primary or recurrent varicose veins.

## Interventional treatment

- For people with confirmed varicose veins and truncal reflux:
- Offer endothermal ablation (see the [NICE interventional procedures guidance on radiofrequency ablation of varicose veins](#) and [endovenous laser treatment of the long saphenous vein](#)).
- If endothermal ablation is unsuitable, offer ultrasound-guided foam sclerotherapy (see the [NICE interventional procedures guidance on ultrasound-guided foam sclerotherapy for varicose veins](#)).
- If ultrasound-guided foam sclerotherapy is unsuitable, offer surgery.

If incompetent varicose tributaries are to be treated, consider treating them at the same time.

## Non-interventional treatment

- Do not offer compression hosiery to treat varicose veins unless interventional treatment is unsuitable.

# Recommendations

The following guidance is based on the best available evidence. The [full guideline](#) gives details of the methods and the evidence used to develop the guidance.

People have the right to be involved in discussions and make informed decisions about their care, as described in [NICE's information on making decisions about your care](#).

[Making decisions using NICE guidelines](#) explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

## 1.1 Information for people with varicose veins

1.1.1 Give people who present with varicose veins information that includes:

- An explanation of what varicose veins are.
- Possible causes of varicose veins.
- The likelihood of progression and possible complications, including deep vein thrombosis, skin changes, leg ulcers, bleeding and thrombophlebitis. Address any misconceptions the person may have about the risks of developing complications.
- Treatment options, including symptom relief, an overview of interventional treatments and the role of compression.
- Advice on:
  - weight loss (for guidance on weight management see the [NICE guideline on obesity prevention](#))
  - light to moderate physical activity



- avoiding factors that are known to make their symptoms worse if possible
- when and where to seek further medical help.

1.1.2 When discussing treatment for varicose veins at the vascular service tell the person:

- What treatment options are available.
- The expected benefits and risks of each treatment option.
- That new varicose veins may develop after treatment.
- That they may need more than 1 session of treatment.
- That the chance of recurrence after treatment for recurrent varicose veins is higher than for primary varicose veins.

A vascular service is a team of healthcare professionals who have the skills to undertake a full clinical and duplex ultrasound assessment and provide a full range of treatment.

## 1.2 Referral to a vascular service

1.2.1 Refer people with bleeding varicose veins to a vascular service immediately.

1.2.2 Refer people to a vascular service if they have any of the following.

- Symptomatic primary or symptomatic recurrent varicose veins. Symptomatic veins are veins found in association with troublesome lower limb symptoms (typically pain, aching, discomfort, swelling, heaviness and itching).
- Lower-limb skin changes, such as pigmentation or eczema, thought to be caused by chronic venous insufficiency.
- Superficial vein thrombosis (characterised by the appearance of hard, painful veins) and suspected venous incompetence.

- A venous leg ulcer (a break in the skin below the knee that has not healed within 2 weeks).
- A healed venous leg ulcer.

## 1.3 Assessment and treatment in a vascular service

### Assessment

- 1.3.1 Use duplex ultrasound to confirm the diagnosis of varicose veins and the extent of truncal reflux, and to plan treatment for people with suspected primary or recurrent varicose veins.

### Interventional treatment

- 1.3.2 For people with confirmed varicose veins and truncal reflux:
- Offer endothermal ablation (see [NICE's interventional procedures guidance on radiofrequency ablation of varicose veins and endovenous laser treatment of the long saphenous vein](#)).
  - If endothermal ablation is unsuitable, offer ultrasound-guided foam sclerotherapy (see [NICE's interventional procedures guidance on ultrasound-guided foam sclerotherapy for varicose veins](#)).
  - If ultrasound-guided foam sclerotherapy is unsuitable, offer surgery.

If incompetent varicose tributaries are to be treated, consider treating them at the same time.

- 1.3.3 If offering compression bandaging or hosiery for use after interventional treatment, do not use for more than 7 days.

## Non-interventional treatment

- 1.3.4 Do not offer compression hosiery to treat varicose veins unless interventional treatment is unsuitable.

## 1.4 Management during pregnancy

- 1.4.1 Give pregnant women presenting with varicose veins information on the effect of pregnancy on varicose veins.
- 1.4.2 Do not carry out interventional treatment for varicose veins during pregnancy other than in exceptional circumstances.
- 1.4.3 Consider compression hosiery for symptom relief of leg swelling associated with varicose veins during pregnancy.

## Recommendations for research

The Guideline Development Group has made the following recommendations for research, based on its review of evidence, to improve NICE guidance and patient care in the future. The Guideline Development Group's full set of research recommendations is detailed in [appendix N of the full guideline](#).

### 1 Natural history of varicose veins

In people with varicose veins at CEAP (Clinical, etiological, anatomical and pathophysiological) stage C2 or C3, what are the factors that influence progression of the disease to CEAP stages C5 or C6?

#### Why this is important

The evidence review for the guideline showed a lack of high-quality evidence on the progression of varicose veins from CEAP stage C2 or C3 to more serious varicose veins disease. A large, observational, prospective cohort study, similar to the Framingham or Bonn veins studies, should be undertaken. The study should recruit patients with C2 and C3 disease and follow the progress of their disease for 5 years. Consideration should be given to including a genetic component in the study because genetic factors have not been studied on a large scale. The results of such a study should help to more accurately identify which patients are at risk of developing more serious disease so that interventions can be offered at an early stage to those who will benefit most.

### 2 Compression as a management option

What is the clinical and cost effectiveness of compression hosiery versus no compression for the management of symptomatic varicose veins?

#### Why this is important

Compression hosiery is widely used as first-line treatment for symptomatic varicose veins. In some areas of the UK a period of hosiery use is a precursor to referral to secondary care.

Discomfort and difficulty in application may cause people to stop wearing compression hosiery or wear it only occasionally. The current evidence for the benefit of compression hosiery is weak. There is little evidence of an impact on symptom relief or an improvement in quality of life. It is therefore not possible to calculate the cost effectiveness of compression hosiery.

A multicentre trial randomising compression hosiery versus no compression in patients with symptomatic varicose veins is needed. The trial should evaluate quality of life, including symptom reduction, and measure adherence with compression hosiery. In addition the trial should investigate the impact of compression on disease progression and the need for subsequent intervention.

### **3 Compression after interventional treatment**

What is the clinical and cost effectiveness of compression bandaging or hosiery after interventional treatment for varicose veins compared with no compression? If there is benefit, how long should compression bandaging or hosiery be worn for?

#### **Why this is important**

The benefit of compression after interventional treatment for varicose veins is unclear. A well-conducted, multicentre, randomised controlled trial (RCT) of compression after interventional treatment would help determine whether compression is beneficial, and if so, what type is best and how long it should be worn for. The trial should include patients who have had 1 of the 3 main interventional treatments: endothermal ablation, ultrasound-guided foam sclerotherapy or surgery. The patients should be divided into 3 groups based on the type of intervention they have had. There should be 6 RCT arms, 1 arm with compression and 1 arm without, in each of the 3 patient groups. Each arm should have subgroups for compression type and duration. Adherence to compression treatment and the impact of adherence on effectiveness should also be evaluated. A cost-effectiveness analysis should be performed. If compression is beneficial, such a trial should help improve quality of life for people with varicose veins and reduce the longer-term need for retreatment.

## 4 Truncal treatment with or without concurrent tributary treatment

What is the clinical and cost effectiveness of concurrent phlebectomies or foam sclerotherapy for varicose tributaries during truncal endothermal ablation for varicose veins compared with:

- truncal endothermal ablation without concurrent phlebectomies or foam sclerotherapy?
- truncal endothermal ablation with phlebectomies or foam sclerotherapy, if needed, 6–12 weeks later?

### Why this is important

Conventional truncal stripping under general anaesthetic involves synchronous phlebectomies of varicose tributaries, and in ultrasound-guided foam sclerotherapy truncal and tributary veins are treated concurrently. In contrast, endothermal ablation may be performed alone to obliterate truncal incompetence, or synchronously with phlebectomies or foam sclerotherapy and current practice varies.

Synchronous tributary treatment ensures a single treatment episode, and the removal of all symptomatic varicosities leads to a better immediate quality of life, but this takes longer and thus may be associated with increased morbidity. Deferred tributary treatment may reduce morbidity, and also mean that some patients do not need tributary treatment (or need fewer tributary treatments on smaller veins). However, it involves 2 interventions for patients who need tributary treatment. Omitting tributary treatments entirely ensures a single treatment episode, but it is unclear whether remaining varicosities will persist and impair quality of life.

At present there is limited evidence from 1 small-scale (n=50) study on the use and timing of tributary treatments after truncal endothermal ablation. There is a need for practice to be based on empirical evidence from a large and sufficiently powered RCT comparing all 3 main intervention options (no tributary treatment, concurrent tributary treatment and delayed tributary treatment).

## 5 Optimal interventional and conservative

## treatments at different stages of disease

What is the optimal treatment (compression, surgery, endothermal ablation or foam sclerotherapy) for varicose veins at each of the CEAP stages, that is CEAP stages 2–3, CEAP stage 4 and CEAP stages 5–6?

### Why this is important

Much of the research into the optimum treatment for varicose veins has involved patients with varicose veins in CEAP stages C2 and C3, so little is known of the relative efficacies of treatment at the more severe stages of disease. Furthermore, some studies have included patients with varicose veins at a range of stages without subgrouping, which may conceal important differences in efficacy between different treatments at different stages of disease. Hence current treatment recommendations, which do not differentiate between patients with varicose veins at different stages, may not be equally effective for all patients.

A large-scale RCT that compares the 4 main treatments (compression, surgery, endothermal ablation and foam sclerotherapy) in subgroups with varicose veins at different stages is needed. The use of CEAP to categorise the disease stages is not ideal because higher CEAP stages do not necessarily indicate greater severity. However, other methods of categorisation are even more problematic. Quality-of-life measures are unlikely to reflect severity of disease because of variations in perception of symptoms. In addition, measuring the degree of venous reflux would necessitate a method of quantifying reflux in the superficial venous system in a way that adequately reflects disease severity, and such a method does not currently exist.

# Finding more information and committee details

To find NICE guidance on related topics, including guidance in development, see the [NICE topic page on varicose veins](#).

For full details of the evidence and the guideline committee's discussions, see the [full guideline](#). You can also find information about [how the guideline was developed](#), including details of the committee.

NICE has produced [tools and resources to help you put this guideline into practice](#). For general help and advice on putting our guidelines into practice, see [resources to help you put NICE guidance into practice](#).

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