

Background

Graduated compression hosiery is used to provide compression and support in conditions related to venous insufficiency/oedema. Treatment should continue for as long as there is evidence of venous disease (in most cases this is life-long - excluding pregnancy). Compression hosiery stockings are available in different classes with differing levels of compression at the ankle and differing indications for use.

RAL Standard versus British Standard

There are two main compression standards used in the UK: RAL standard and British standard. Different hosiery manufacturers work to different specifications. Prescribers are advised to use British Standard compression hosiery first-line as this is more cost-effective, except in leg ulcer management or in patients who have limb distortion, where RAL Standard is recommended as the compression pressure is higher.

Table 1: Standards and classes of compression stockings

Compression	RAL standard	RAL range Ankle compression	British Standard	British range Ankle compression
Light	-	-	Class 1	14-17 mmHg
Moderate	Class 1	18-21 mmHg	Class 2	18-24 mmHg
Firm	Class 2	23-32 mmHg	Class 3	25-35 mmHg
Extra firm	Class 3	34-46 mmHg	-	-
Very firm	≥Class 4	≥60 mmHg	-	-

Table 2: Which class of compression hosiery?

Indications for use	RAL standard			British Standard		
	Class 1	Class 2	≥Class 3 ^Q	Class 1	Class 2	Class 3 ^Q
After deep vein thrombosis		✓			✓	✓*
Atrophie blanche	✓				✓ **	✓ **
Gross varicose veins		✓			✓	✓
Healed venous leg ulcers		✓			✓ **	✓ **
Lipodermatosclerosis	✓				✓ **	✓ **
Mild oedema	✓				✓	
Superficial or early varicose veins	✓			✓		
Superficial thrombophlebitis	✓	✓			✓	✓
Treatment/prevention of venous leg ulcers		✓	✓		✓	✓
Varicose veins				✓	✓	
Varicose veins during pregnancy	✓	✓		✓	✓	
Venous eczema	✓	✓		✓	✓	

* If Class 3 poorly tolerated, review patient to assess their challenges with therapy. Prescribing Class 2 may improve tolerance.

** Class 2 is suitable for most patients. Class 3 can be used if inadequate responsive to Class 2.

^Q Specialist assessment/review required before initiation for ≥Class 3.

Below knee vs. thigh length hosiery

Below knee compression stockings are the preferred choice as they are better tolerated than thigh length compression, resulting in improved compliance. Below knee stockings also improve the action of the calf-muscle pump, improving venous return from the leg. Thigh length stockings are not usually necessary, but can be considered for people with severe varicose veins above the knee or who have swelling which extends above the knee. When prescribed for varicosities, the garment should reach the highest level of the varices and extend 5cm above it. Thigh length stockings should be considered if there are severe varicose veins above the knee or swelling which extends above the knee.

Closed toe vs. open toe

Choice mainly depends on patient preference. Open toe stockings may be necessary if the patient:

- has arthritic or clawed toes, or fungal infection

- prefers to wear a sock over the compression stocking
- has a long foot size compared with their calf size

Circular knit vs. flat knit

Hosiery is constructed in either circular knit or flat knit. Circular knit is a fine seamless fabric produced as a tube and is suitable for people without oedema and no/minimal limb distortion. Flat knit is produced as one piece of material and sewn together with a seam at the back. The fabric is stiffer and is more suitable for people with chronic oedema and distorted limbs.

Application aids

These are used to assist application of hosiery garments. Prescribe the most cost-effective device appropriate for the patient. Some patients may not be able to apply compression hosiery even with an application aid (see Table 8).

Leg ulcer kits

These are used to provide compression for healing leg ulcers to avoid using bulky bandages. The kits compose of an inner liner stocking and an outer stocking which generally provides a 40mmHg compression in the two layers. A two-layer hosiery kit should be the first-line treatment for patients with a normal limb shape, no oedema and a wound exudate that is low to moderate and contained within the provided wound dressings.

STEP 1: PATIENT ASSESSMENT

Compression hosiery should **not** be applied if there is a history of symptomatic arterial disease. If in doubt, Doppler ultrasound should be performed. Before prescribing compression hosiery the patient should be assessed for:

- Painful cramping in calf muscles after activity e.g. walking or climbing stairs
- Leg numbness or weakness
- Sore ischaemic looking toes, feet or legs (obvious lower limb ischaemia, gangrene/ischaemic ulceration)
- Cold leg and/or foot, especially when compared with the other side
- If there is at least one 'foot pulse' (not 'peripheral pulse') then compression can be used
- Poor capillary refill – should be less than 3 seconds
- Drop in pulse oximetry on leg elevation

An Ankle Brachial Pressure Index (ABPI) should be requested for all patients that are being supplied with compression hosiery. It is important to check the condition of the skin. Fragile skin may be damaged while trying to put on or take off compression stockings. Ideally, venous ulcers should be healed before using compression stockings.

The following information is guidance only and should not replace clinical judgement:

All patients with chronic venous leg ulcers should have an ABPI performed prior to treatment using a Doppler ultrasound. Arterial insufficiency should be investigated further by the vascular team to ensure adequate circulation, if clinically appropriate.

Table 3: Advice on compression hosiery wear

ABPI	Advice
<0.5	Compression stockings should not be worn as severe arterial disease is likely. Refer patient for specialist vascular assessment.
0.51 to 0.65	Refer to Wound Care Service for advice. May require referral to vascular services if patient has signs of arterial disease.
0.65 to 0.7	Class 1 German RAL compression hosiery for moderate/high level's oedema. British Standard hosiery for minimal oedema. If unhealed ulcers, contact Wound Care Service for advice. May require referral to Vascular Surgeon for assessment of arteries and possible surgical treatment.
0.7 to 0.8	Class 2 German RAL compression hosiery for moderate/high level's oedema. British Standard hosiery for minimal oedema. If unhealed ulcers, refer to Wound Care Service for advice.
0.8 to 1.3	Compression stockings are safe to wear.
>1.3	Refer patient to a tissue viability nurse for advice/assessment.

Table 4: Contraindications and cautions in use

Contraindicated	Caution in use
<ul style="list-style-type: none"> ▪ Suspected or proven peripheral arterial disease ▪ Peripheral neuropathy or other causes of sensory impairment ▪ Any local conditions in which stockings may cause damage, for example fragile ‘tissue paper’ skin, dermatitis, gangrene or recent skin graft ▪ Peripheral arterial bypass grafting ▪ Known allergy to material of manufacture ▪ Unusual leg size or shape ▪ Major limb deformity preventing correct fit (<i>consider flat-knit hosiery</i>) 	<ul style="list-style-type: none"> ▪ Cardiac failure ▪ Congestive heart failure (<i>pending full assessment and Doppler</i>)

STEP 2: PRESCRIBING

When not to prescribe:

Compression hosiery should not be prescribed for patients if it is intended to be used for the sole prevention of DVT for travellers. Patients in this cohort should be advised to purchase Class 1 below knee stockings or flight socks. All other patients outside of this cohort that who require compression hosiery should have them prescribed.

Prescribing:

- Compression hosiery should be prescribed for patients to reduce the risk of a worsening of their condition which would then necessitate further treatment e.g. patient goes on to develop ulceration.
- All hosiery items are **acute prescription only** - do **not** add to repeat prescription (unless treating leg ulcers and patient is stable on current brand).
- Prescribe hosiery by brand name at the appropriate Class and length (i.e. below knee, thigh length). If open-toe hosiery is required it must be specified or closed toe stockings should be supplied.
- The number of stockings must be specified. Two stockings (1 pair) should be supplied if one limb is affected or 2 pairs if used on both legs.
- Made-to-measure hosiery should be prescribed accordingly.
- If properly cared for, two garments per limb should last 6 months. Stockings should be replaced earlier if damage occurs or if the stocking does not return to its original shape after stretching. Patients experiencing damaged hosiery should be re-measured and their application method assessed. Consider if an open toe variation is more appropriate. Ensure that the patient is following correct washing instructions. Ideally, each time a stocking is replaced the leg should be re-measured.
- In the absence of any risk factors or signs/symptoms of arterial disease, start with British Class 1 compression hosiery, up to 17mmHg, whilst waiting for the lower limb and Doppler assessment to avoid deterioration of condition.
- Ideally Doppler tests should be repeated every 6-12 months or earlier if clinically indicated.
- Conditions such as arthritis may make it difficult for the patient to apply or remove stockings. Consider if an application aid may be helpful.

Table 5: RAL standard compression hosiery formulary

Key: O/T: Open toe. C/T: closed toe

Mediven® brand	Appropriate prescribing quantity
Mediven® plus O/T (Class 1, 2, 3) Below knee, thigh length (silicone top-band or thigh length waist attachment)	One leg: 1 pair every 6 months Both legs: 2 pairs every 6 months
Mediven® Elegance C/T (Class 1, 2) Below knee, thigh length	
Tights	2 pairs every 6 months
Mediven® for men ribbed compression socks below knee C/T (Class 1, 2)	2 pairs every 6 months
Mediven® active compression socks below knee C/T (Class 1, 2)	
Made-to-measure: https://www.mediuk.co.uk/drug-tariff/prescriber-support/mondi-made-to-measure-tips-for-ordering/	
JOBST® brand	Appropriate prescribing quantity
JOBST Elvarex (Class 1,2,3,3 Forte, 4,4 Super) Knee high O/T or footless, Thigh high O/T or footless, Chap style O/T	One leg: 1 pair every 6 months. Both legs: 2 pairs every 6 months
Tights O/T	

JOBST Elvarex Soft (Class 1,2,3) Knee high O/T, Thigh high O/T or footless, Chap style O/T Tights O/T	One leg: 1 pair every 6 months. Both legs: 2 pairs every 6 months 2 pairs every 6 months
JOBST Classic (Class 2,3) Knee high, Thigh high Tights	One leg: 1 pair every 6 months. Both legs: 2 pairs every 6 months
JOBST forMen Ambition knee high (Class 1,2)	2 pairs every 6 months
JOBST forMen Explore knee high (Class 1,2)	
JOBST Opaque (Class 1,2) Knee high, Thigh high Tights	One leg: 1 pair every 6 months. Both legs: 2 pairs every 6 months 2 pairs every 6 months
JOBST UltraSheer (Class 1,2) Knee high, Thigh high Tights	One leg: 1 pair every 6 months. Both legs: 2 pairs every 6 months 2 pairs every 6 months
Made-to-measure: http://www.bsnmedical.co.uk/en/products/wound-care-vascular/category-product-search/vascular/compression-garments/jobstr-elvarexr.html	

Table 6: British standard compression hosiery formulary

Key: O/T: Open toe. C/T: closed toe

Duomed [®] Soft brand	Appropriate prescribing quantity
Below knee O/T (Class 1,2,3) or C/T (Class 1,2)	One leg: 2 pairs every 6 months
Thigh length O/T (Class 1,2,3) or C/T (Class 1,2)	Both legs: 4 pairs every 6 months
Made-to-measure: http://www.altimed.co.uk/	

Table 7: Leg ulcer kits and liner packs formulary

Note: Leg ulcer kits contain 1 medical stocking + 2 compression liners. Key: O/T: Open toe. C/T: closed toe

Products	Appropriate prescribing quantity
Activa[®] Leg Ulcer Hosiery Kit	2 kits every 6 months
ActiLymph[®] Hosiery Kit	
Jobst UlcerCARE[®]	
Mediven[®] Ulcer Kit	
Activa[®] Compression Liner Pack O/T	2 packs every 6 months
Activa[®] Compression Liner Pack C/T	
Mediven[®] Liner Pack	
Jobst UlcerCARE[®] Compression Liner Pack	

Table 8: Application aids formulary

Product choices	Appropriate prescribing quantity
Easy-Slide[®] (O/T only)	1 every 12 months
Mediven 2 in 1[®]	
Magnide[®]	
Acti-Glide[®]	
Sockaid[®]	Replace only if broken
Rolly	

STEP 3: PATIENT REVIEW

Review patient every six months (with Doppler ultrasound if appropriate) to:

- Reassess the condition for which the stocking is being prescribed
- Ensure patient is wearing the stocking successfully and replacing them appropriately
- Repeat leg measurements to ensure that the stocking size is still correct

Check patient compliance

- Ensure patient understands the reasons for wearing compression stockings.
- Ensure patient has been shown how to apply and remove hosiery. The best time to put stockings on is first thing in the morning before any leg swelling develops.

- Stockings are available in different colours – check colour preference before ordering. Some people prefer other colours rather than flesh-coloured. Men’s compression socks are ribbed and are more hardwearing if someone is active.
- Recommend purchase of an over the counter emollient to reduce skin dryness and irritation.
- Try a lighter compression level if patient is having difficulty tolerating current level.
- Consider switching to a below-knee stocking if patient is having difficulty using thigh length.
- An application aid may be helpful in older patients and carers and promote adherence (see Table 8).
- Remind patients that the life of hosiery can be prolonged by correct washing - hand washed at about 40°C and dried away from direct heat.

References

- <https://cks.nice.org.uk/compression-sockings>
- <https://www.nice.org.uk/guidance/ng158>
- <https://www.nice.org.uk/guidance/CG168>
- Derby Joint Area Prescribing Committee. Guidelines for the use of compression hosiery, 2016 Nov.

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