

# Selecting compression garments for treating chronic oedema

## Natalie Lee and Jane Wigg

Natalie Lee RN, BSc is Clinical Advisor Haddenham Healthcare, Lymphoedema Specialist, Wolverhampton Lymphoedema Service; Jane Wigg RGN, MSc is Clinical Innovations Manager, Haddenham Healthcare, Director, Leduc UK, Clinical Advisor, LymphCare UK

Email: [jane@hadhealth.com](mailto:jane@hadhealth.com)

Lawrence (2009) highlights community nurses are best placed to assess and manage uncomplicated cases of chronic oedema in the primary care setting.

Doherty (2006) states there is a clear lack of knowledge within the community nurse setting, where identification of and management of oedema are concerned, with a poor level of knowledge and skill apparent, when managing patients with lymphoedema (Morgan et al, 2005). Anecdotal evidence from practice suggests that there is a high referral rate for garment fitting.

An audit of re-referrals to a local service found that the most common cause was the need to be re-measured for hosiery or provision of aids to assist with garment application. This shows a general lack of knowledge or low confidence in the selection of appropriate hosiery.

This audit identified a training gap, which needed to be filled.

Over the past few years, significant advances have taken place in the use of compression garments, with many different styles and types available from many companies. It is imperative that knowledge is improved to promote better management of this group of patients and minimise the length of time and resources spent by community services on implementing compression bandaging.

It is documented that patients increase their risk of further complications if there is a failure in the identification of chronic oedema, resulting in possible allegations of poor care (Beldon, 2009).

Venous leg ulcers have delayed healing times where patients are non-concordant with hosiery; therefore a detailed history and assessment of the limb tissues and shape are paramount, in ensuring garments are correctly selected and that patients are able to apply and remove hosiery or have help available to implement this (Moffatt et al, 2009).

Lymphoedema is defined as an incurable, progressive, chronic condition where there is an accumulation of fluid and proteins in the tissues, which develops as a result of low output failure of the lymphatic system and can be of primary or secondary nature (Keeley, 2000). It can manifest as a swelling of one or more body parts affecting patients' physical and psychosocial wellbeing (Lymphoedema Framework, 2006). Secondary lymphoedema is more common than primary lymphoedema, with the most common form being due to filarial infection from the mosquito (Hardy, 2006). However the most common form of lymphoedema in the UK is obstructive, being caused either by malignant occlusion or interruption of the nodes by surgery or radiotherapy.

There are many other causes of secondary lymphoedema, which include obesity, immobility, limb dependency and trauma. As such, it is sometimes described as acquired lymphoedema (Keen 2008; Shingale, 2007).

The types of oedema caused by circulatory disorders of the veins, heart, kidneys or liver is due to an increase in capillary filtration overwhelming the capacity of the lymph vessels, causing a low protein oedema. In time, the lymphatic system will fail, resulting in a mixed aetiology oedema, e.g. lymphovenous.

Low protein oedemas may reduce when limbs are elevated, diuretics are prescribed or hosiery is applied (Linnett, 2005). The term chronic oedema is used to describe oedema caused by other pathologies which have impacted on the removal of lymph from the lymphatic's and been present for longer than three months (Partsch and Moffatt, 2012).

## Use of Compression

Compression garments have been widely used in the management of lymphoedema and form part of the maintenance phase of treatment. Maintenance therapy usually consists of skincare, exercise, self lymphatic drainage

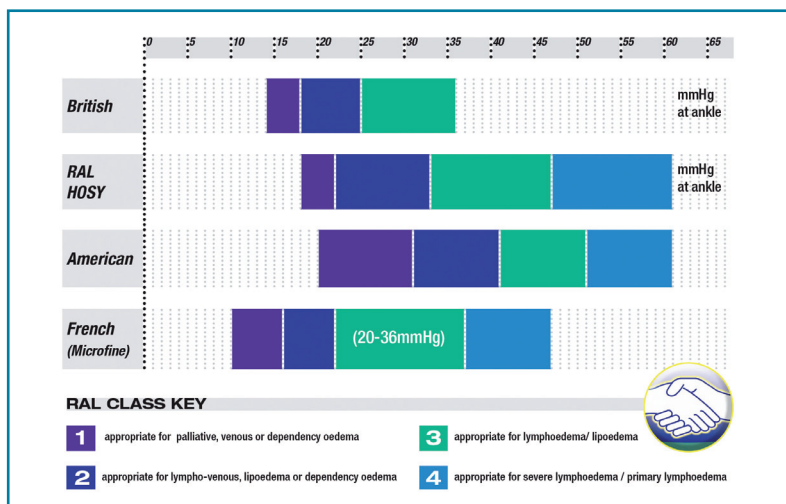
## ABSTRACT

The article focuses on the use of compression for chronic oedema and lymphoedema. It will provide information and advice to community nurses to aid the decision making process when selecting compression garments. It will discuss the extensive options available from the Veni range of compression garments for lower limb swelling from Haddenham Healthcare and through case studies demonstrate its versatility in practice.

## KEY WORDS

- ◆ Lymphoedema ◆ Compression garments ◆ Veni range
- ◆ RAL compression

Figure 1. Veni compression ranges from class 1-4. Class 1 is most commonly used in the community



and hosiery (Lymphoedema Framework, 2006) and should also include psychosocial care. Additional treatment that can be included in maintenance therapy is the use of low-level laser therapy, kinesiotaping, modern pneumatic compression such as LymphAssist or wrapping devices.

The Veni range of garments offers a versatile collection of hosiery aimed at those patients with lymphoedema and other lymphatic conditions and it is suitable for the management of chronic oedemas following appropriate assessment to determine the cause of oedema.

Where skin integrity and limb shape are compromised, garments could be replaced with a Velcro wrapping system such as FarrowWrap, which works like a short stretch bandaging system and is available on drug tariff. This can be used to reduce limb volume during the intensive phase of treatment or as part of maintenance therapy alone.

Treatment using compression garments is often compromised by the lack of implementation of appropriate hosiery or non-concordance, due to ill-fitting garments

and problems with application. With the introduction of lymphoedema-specific hosiery onto drug tariff in 2006, practitioners and patients now have access to a wider range of stronger hosiery to accommodate the differing needs of the lymphoedema patient (Hardy, 2006). Compression standards are regulated by Reichsausschuss Für Lieferbedingungen (RAL), which is the organisation responsible for quality and technical standards in Germany, including compression. Not all companies provide compression according to RAL and this should be considered when recommending products.

As detailed in Figure 1, compression ranges from Class 1-4 with class 1 being the most commonly used in the community. Class 1 garments are most suitable for a dependency or oedema caused due to immobility such as arthritis or obesity.

Class 2 garments are generally used where a venous involvement is also present, such as lymphovenous oedema or a mild lymphoedema and class 3 for a lymphoedema or where skin changes such as fibrosis are present.

### Contraindications to compression

Compression is contra-indicated in critical ischaemia where there is an ankle brachial pressure index (ABPI) of <0.5 or ankle systolic pressure of 50 mmHg, but can be seen to enhance arterial circulation in patients with mixed disease (ABPI 0.4-0.8), as an increased capillary filtration can enable an improvement of oedema (Partsch and Moffatt, 2012).

If possible a Doppler test should always be taken prior to the application of compression although it should be remembered that this test can be inaccurate where oedema is present (Bianchi and Todd, 2000).

Therefore it is imperative that a full medical history and a thorough clinical assessment are taken prior to the application of compression hosiery.

Caution should be exercised in those with cellulitis, where garments may have to be removed for a number of days for the cellulitis to settle and antibiotic treatment to be implemented. Other contra-indications, such as acute cardiac failure, extensive ulceration, diabetes and severe peripheral neuropathy, can present challenges in management of oedema due to not being able to implement compression garments or compromising on the desired compression (Lymphoedema Framework, 2006).

### Extensive options available

Haddenham Healthcare provides products specifically designed for patients with lymphoedema and offers a system of made-to-order hosiery.

Veni are circular knit garments made by the continuous knitting of the fabric using a cylinder, which ensures garments have no seams, are thinner than flat knit garments and are more cosmetically pleasing for patients, aiding concordance with treatment. The benefit of Veni is that it has different options at no extra cost. This is the way in which the garment is produced in a bespoke manner through the made-to-order process.

Table 1.

	Made to Order Options	Drug Tariff Options
Toe	Open, Closed	Open, Closed
Width	Standard, Extra Wide	Standard, Extra Wide
Leg Length	Short, Regular, Long	Short, Regular, Long
Foot Length	Short, Regular, Long	Regular
Colour	Choice of 11 colours	Beige, Black
Grip Top	Fine Lace, Strong Lace, Strong Plain	Strong Plain (on Thigh Length Garments)
Panty Options on tights	Regular, Full compression, Half compression, With fly for men, Loose fit, No Gusset Open Crotch, Open Front, Short Body Length, Regular Body Length, Long body Length	Regular

Veni is available in RAL class 1-3 garments in a variety of styles and colour options. Haddenham offers an extensive size range from I-VIII and with the options of extra wide calf and thigh length.

This ensures that some of the largest legs will fit into ready-made garments fitting up to a 54cm calf and a 78cm thigh. The soft, flat-knit Pertex light garment, soon to be available on drug tariff, extends up to 65cm calf and 108cm thigh.

Veni is available on drug tariff in beige and black, but 11 colour options are available at no extra cost. Offering a colour range, which is more appealing to patients, ensuring better compliance. Anecdotal evidence from clinical practice suggests that some men prefer darker colours such as blue, grey and black, as they can be compared with normal socks.

On drug tariff, Veni garments are available in three leg lengths, standard or extra-wide calf and thigh options and open or closed toe, with or without a grip top and styles including below knee, thigh length and pantyhose and can be ordered as a single unit or pair.

Other options, not yet available on drug tariff include thigh length with a combined waist band, three foot lengths and panty options with open gusset, open front, maternity/ loose fit and with a male fly option, also suitable for people with catheters.

Also available is a one-legged panty option for those who have swelling extending above the thigh, or genital oedema. In addition the body part can be altered to a lower waist line offering more compliance with different clothing styles as can be seen in *Table 1*.

Loose fit and fly panty options are useful in aiding compliance in larger patients or for men who feel less like they have been provided with a pair of women's tights. Veni

is available with a variety of grip tops on both below knee and thigh length garments, ensuring comfort. Problems with garment slippage are minimal.

Grip top options are available in 5cm with fine lace, strong lace or strong plain top and 3cm plain top is available on request. The addition of a strong plain grip top is more aesthetically pleasing for men, with a fine lace grip top option for ladies. The 3 leg lengths ensure superior fit with a short, standard and long options.

Garments can easily be selected for patients who are shorter, petite, for a child with lymphoedema and tall people alike. The range is further complemented by three-foot lengths, in open or closed toe, ensuring correct fit and reduced need for made-to-measure garments.

Haddenham Healthcare has a measuring system in place for made-to-order garments (*Table 2*), with the need to measure at three or five points, depending on the style of garment, ensuring time taken by clinicians for measuring is minimal and requires little effort.

### Case study 1

Mrs Brown (pseudonym) was 43 years old when referred to the lymphoedema clinic with a long-standing problem of oedema located to the lower left leg with swelling mainly to the dorsum of the foot and ankle.

Following a full holistic assessment Mrs Brown was diagnosed with primary lymphoedema, due to familial history, having had mild oedema since childhood. The limb shape was good and comparable with the unaffected limb and although an excess limb volume of 12% was present, on measurement there were minimal skin changes with the tissues being soft and non-pitting.

Implementation of a RAL class 2 below knee, Veni,

**Table 2. Circular knit leg hosiery size selector**

Measurement Points	Circumference (cms)							
	I	II	III	IV	V	VI	VII	VIII
Extra wide thigh top <b>g</b>	43-55	45-59	49-63	53-66	57-69	61-72	64-75	67-78
Extra wide mid thigh <b>f</b>	39-49	41-52	44-55	47-58	50-61	53-64	56-67	59-70
Extra wide calf <b>d</b>	28-34	30-36	32-38	34-41	36-43	38-45	40-49	42-54
Extra wide mid calf <b>c</b>	29-35	31-37	33-39	35-42	37-45	39-47	41-52	43-56
Thigh top <b>g</b>	43-48	45-51	49-55	53-59	57-63	61-66	64-69	67-72
Mid thigh <b>f</b>	39-43	41-46	44-49	47-52	50-55	53-58	56-61	59-64
Calf <b>d</b>	28-30	30-34	32-36	34-38	36-41	38-43	40-45	42-47
Mid calf <b>c</b>	29-33	31-35	33-37	35-39	37-42	39-45	41-48	43-51
Ankle <b>b</b>	18-20	20-22	22-24	24-26	26-28	28-30	32-34	32-34

Regular lengths	Calf (A-D): 38-43cm	Thigh (A-G): 60-80cm	Tights (inside Leg): 76-85cm	Foot: sizes 5-9
Short lengths	Calf (A-D): 33-37cm	Thigh (A-G): 57-67cm	Tights (inside Leg): 65-75cm	Foot: up to size 5
Long lengths	Calf (A-D): 44cm+	Thigh (A-G): 81cm+	Tights (inside Leg): 86cm+	Foot: size 10+

size V, closed toe garment in black was prescribed as Mrs Brown felt that black would make it less obvious when wearing compression under her trousers. Application and care instructions were provided and a six-week follow-up appointment arranged with the same therapist.

At her six-week follow-up, Mrs Brown had tolerated her garments well, wearing for between eight and 12 hours a day. But she was disappointed at the slow response to her foot and ankle and although the limb volume had reduced by 4% she was keen for an increase of compression to address this.

Following discussion it was felt that, as the oedema was mainly located to the foot and ankle, the application of a class 1 Veni anklet would be applied underneath her below knee stocking to increase the compression to the foot. Double layering of hosiery does combine the two levels of compression used, meaning that Mrs Brown now had 41-53 mmHg, when applied together.



*A patient wearing a Veni class 2 III extra wide, short length in black*

Mrs Brown is now maintained in a size IV below knee Veni class 2 and size IV anklet and manages well.

Double layering of hosiery is common practice by many experienced lymphoedema therapists within established lymphoedema clinics. Where a more stubborn oedema is present or for those with primary lymphoedema, stronger compression is required.

The application of stronger garments can sometimes be difficult for patients but the double layer of garments can overcome this. There are many patients maintained in a double layer of Veni garments at the authors' clinical setting and this allows the patient to have more flexibility with their use of garments, and ensures better concordance with treatment.

## Case study 2

Mr Arnold (pseudonym) was referred to the lymphoedema service following diagnosis and treatment for a tumour located to the bladder wall.

He had undergone chemotherapy and extensive radiotherapy to the pelvic region but was diagnosed with metastatic disease of the prostate. He had uretic stents fitted to aid kidney function but following radiotherapy had developed a lymphoedema to the right leg, supra pubic region and genitals with minimal oedema to the left leg.

The oedema was impacting on Mr Arnold's quality of life as his mobility and independence had reduced and he developed urinary problems due to penile oedema.

On assessment the tissues to the right leg were firm and non-pitting with positive stemmer signs to the digits. The oedema extended from the toes into the buttocks requiring the need for loose fitting clothing. His wife, Mrs Arnold as his main carer, was finding it increasingly difficult to care for Mr Arnold due to his reduced mobility and deteriorating condition.

Mr and Mrs Arnold were shown several types of compression garments to allow for a suitable compression product and although recommendations were made by the clinician to use a panty garment with an open fly, Mr Arnold was reluctant because he felt that tights were not masculine and would not be comfortable as he was presently unable to tolerate tight clothing. It was agreed to order a pair of closed toe, thigh length stockings in grey and applicators as Mrs Arnold would be applying hosiery. Mr Arnold was pleased to be able to have his garments in grey as this was the colour of socks he'd worn in his younger years. A Gus comfort applicator was the applicator of choice as these are easy to use and can be used as a donner (to put the hosiery on) and doffer (to remove it).

A plan of care was initiated to include medical lymphatic drainage, the application of penile sheaths and an Eto scrotal support pouch to contain the genital oedema. In addition kinesiology tape was applied to the supra pubic region and buttocks to aid lymphatic drainage where the garments did not reach.

This proved to be invaluable to Mr Arnold, helping him to increase his mobility and maintain some independence.

Mrs Arnold felt that the applicators made the daily application of hosiery easier and overall Mr Arnold's lymphoedema was well managed and his comfort maintained until the end of his life.

This was achieved through access to the specialist lymphoedema service and in partnership with Mr and Mrs Arnold and other members of the multi disciplinary team (MDT). This highlights the importance of a basic knowledge being required by all community staff to initiate referral to specialist services, where appropriate.

### Case study 3

Mrs Jones presented to the lymphoedema clinic after a referral from her local district nursing service following compression bandaging for the treatment of venous leg ulcers. Her ulcers had almost healed and the nurses requested measuring for appropriate compression garments.

On assessment her legs presented with classic signs of venous disease with haemosiderin staining evident to both gaiter areas, ankle flare and multiple thread veins to her thighs. There was a small superficial ulcer present which had almost 100% epithelialisation.

As bilateral below knee bandaging had been carried out oedema had been displaced above knee and to the toes, leaving larger doughy thighs and toe oedema. Mrs Jones's oedema was exacerbated by her obesity which often presents challenges with the fitting of garments.

The availability of larger sizes in the Veni range meant Mrs Jones was able to wear a size VIII extra wide Veni, class 2 panty garment which she found comfortable and was able to apply herself.

She was able to have a small dressing applied to her ulcer for protection from shearing while it completely healed and the implementation of a Haddenham microfibre toe glove to address her toe oedema.

### Summary and conclusion

The Veni range of compression hosiery offers clinicians an extensive choice of garments for the management of chronic oedema in the community. With easy to measure guides and an extensive range of garments that are appropriate for the varying needs of patients with chronic oedema, management of this condition can be improved. With the advances that have taken place over the past few years and the increased availability of compression garments and other innovations to improve practice, the management of patients with chronic oedema has improved considerably.

Companies have been working closely with clinicians to support staff in the appropriate measurement and fitting of garments and to increase knowledge, awareness and confidence in the management of chronic oedema. It is apparent that the availability of support from companies which supply compression garments are best placed to offer training and guidance that is required by community staff.

Haddenham Healthcare continues to work closely with clinicians and community staff to provide training and offer ongoing support to clinicians to improve patient

care and confidence in treating this increasing and debilitating condition.

BJCN

*Declaration of interest: This product focus feature, was prepared with the support of Haddenham Healthcare*

Beldon, P (2009) Managing 'wet legs' in patients with chronic oedema. Skills for Practice: Management of chronic oedema in the community. *Wounds UK*, Aberdeen

Bianchi J, Todd M (2000) The management of a patient with lymphoedema of the legs. *Nurs Stand* 14(40):51-6

Doherty, D (2006) Assessment of the lower limbs by the community nurse. *The Lymphoedema Supplement*: 9-12

Hardy, D. (2006) Managing long term conditions: Non-cancer related lymphoedema. *Br J Nur* 15(8):444-52

Keeley, V (2000) Classification of Lymphoedema. In: Twycross, R, Jenks, K, Todd, J (eds) *Lymphoedema*. Radcliffe Medical Press, Abingdon

Keen, DC (2008) Non- cancer related lymphoedema of the lower limb. *Nurs Stan*. 22(24):53-61.

Lawrence, S (2009) Innovations in the management of chronic oedema. *Chronic Oedema Supplement*: 14-21

Linnett, N (2005) Lymphoedema: Recognition, assessment and management. *Wound Care*: 20-26

Lymphoedema Framework (2006) *Best Practice for the management of lymphoedema. International consensus*. Medical Education Partnership, London

Lymphoedema Framework (2012) *Best Practice for the management of lymphoedema. Compression Therapy: A Position document on compression bandaging*. 2nd Ed. Imprimerie Reboul: Saint- Etienne France

Moffatt C, Kommala D, Dourdin N, Choe Y. (2009) Venous leg ulcers: patient concordance with compression therapy and its impact on healing and prevention of recurrence. *International Wound Journal*. 6(5):386-93.

Morgan, PA, Moody M, Franks PJ et al (2005) Assessing community nurses' level of knowledge of lymphoedema. *Br J Nur* 14(1): 8-13

Partsch, H, Moffatt, C (2012) An overview of the science behind compression bandaging for lymphoedema and chronic oedema. In: *Lymphoedema Framework (2012) Best Practice for the management of lymphoedema, Compression Therapy: A Position document on compression bandaging*. 2nd Ed. Imprimerie Reboul: Saint- Etienne France

Shingale, FJ (2007) *Lymphoedema: Lipoedema Diagnosis and Therapy, A guide for those affected*. 3rd Ed Schlutersche, Germany

### LEARNING POINTS

- ◆ Chronic oedema in the community setting is increasing due to obesity, an increased aging population and co morbidities
- ◆ Compression garments, through graduation improve venous return and reduce oedema
- ◆ The extensive Veni range of products provide solutions without always needing custom made garments
- ◆ Fitting appropriate garments as early as possible will save on resources
- ◆ RAL compression class 2 is usually the most suitable for venous disease