

# Audit of the use of compression hosiery in two NHS Trusts

## KEY WORDS

- ▶▶ Chronic oedema
- ▶▶ Compression hosiery
- ▶▶ Prevention

**Background:** Compression therapy is integral in the treatment and prevention of venous and lymphovenous disorders. **Methods:** An audit of 42 nurses from Worcestershire Health and Care Trust and Worcestershire Acute Hospitals Trust was conducted to identify factors influencing decision making when selecting compression hosiery. **Results:** The most common reason given for using compression hosiery was to prevent ulcer recurrence, and the majority reported using British Standard off-the-shelf hosiery. Nurses were most likely to have their compression hosiery selection influenced by patient concordance. **Conclusion:** While there was evidence of sound practice, particularly in terms of the use of compression hosiery to prevent chronic venous disease progression, this study highlights a need for practice development and education for nurses in the use and selection of compression hosiery.

Compression therapy is considered one of the most significant advancements in the treatment and prevention of venous and lymphovenous disorders (Lymphoedema Framework, 2006; Wounds UK, 2007; World Union of Wound Healing Societies (WUWHS), 2008).

The primary treatment for chronic venous hypertension is a firm compression bandage or stocking supporting the superficial veins and counteracting raised capillary pressure (Hafner and Junger, 2000; Amsler et al, 2009). This aids venous return and reduces the superficial venous pressure by exerting external pressure on the interstitial tissue (Moffatt et al, 2007; WUWHS, 2008; O'Meara et al, 2009). Compression therapy can also assist in lymphatic function by encouraging the movement of fluid into the lymphatic capillaries, thereby preventing or reducing oedema (Lymphoedema Framework, 2006; Wounds UK, 2007; Williams 2009).

Where it is clinically appropriate, the use of compression hosiery in the care of patients with active venous leg ulceration achieves similar healing rates to those achieved by compression bandages (Hendricks and Swallow, 1985; Burgess and Robinson, 1993; Samson, 1993; Horakova and Partsch, 1994; Samson and Showalter, 1996).

Hosiery has the additional benefits of being well-tolerated by the patient, providing consistent and reproducible pressures, and is also cost-

effective, as the hosiery can be washed several times and will continue to provide effective compression therapy.

A Cochrane review (O'Meara et al, 2009) of randomised controlled trials that investigated the clinical effectiveness of compression bandage/stocking systems in the treatment of venous leg ulceration concluded that, while compression is better than no compression at all, there is limited evidence that compression hosiery reduces leg ulcer recurrence. A recommendation was made that further research be undertaken (Nelson et al, 2000; Jungler et al, 2004). More recently, Dowsett (2011) identified a reduction in recurrence of leg ulceration from 18–20% to 5.8%, following the introduction of RAL (European standard) hosiery in a UK primary care Trust.

## COMPRESSION HOSIERY BEST PRACTICE

The Best Practice Statement for compression hosiery (MEP, 2007) discusses the importance of hosiery in the healing of venous leg ulcers, primary prevention of leg ulcers where varicose veins are present, prevention of deep vein thrombosis, prevention of complications following deep vein thrombosis, and maintenance of, or reduction in, oedema.

The use of compression hosiery is common practice for many clinicians, particularly nurses. While manufacturers offer guidance for

JACKIE STEPHEN-HAYNES  
Professor in Tissue Viability,  
Birmingham City University,  
and Consultant Nurse,  
Worcestershire Health and  
Care NHS Trust, Stourport-on-  
Severn, UK

RACHAEL SYKES  
Honorary Tissue Viability  
Nurse, Worcester Health and  
Care NHS Trust,  
Stourport-on-Severn, UK

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appropriate selection, there is limited research on the decision-making process that nurses undertake when selecting hosiery. The various options available to the clinician can facilitate the best possible outcome for the patient. Options include:

- British Standard classification hosiery
- Leg ulcer treatment kits
- European Standard classification hosiery (both flatbed knit and circular knit)
- Made-to-measure hosiery.

These products each come in a range of sizes, colours, compression values (mmHg), fabric stiffness, and style (e.g. below the knee, thigh length, tights).

While all of these options facilitate choice, for both the clinician and wearer, it may also lead to confusion and error if there is a lack of knowledge. It is essential that all clinicians involved in the assessment, selection, and fitting of compression hosiery are competent to do so (MEP, 2007).

**AIMS**

Worcestershire Health and Care NHS Trust (Stephen-Haynes et al, 2011) offers a comprehensive wound care formulary that incorporates compression therapy, including bandaging and hosiery. This formulary seeks to support the clinician in the provision of concise and accurate information, which is supported educationally within practice (MEP, 2008).

An audit of 42 nurses from Worcestershire

Health and Care NHS Trust and Worcestershire Acute Trust was undertaken to investigate formulary compliance and factors influencing decision-making and product choice when selecting compression hosiery for patients. The aims of the audit were to establish:

- Formulary compliance
- Whether hosiery selection is appropriate for the clinical indication
- Data to assist in the appropriate deployment of resources
- Levels of clinician knowledge and identify training needs.

**METHOD**

An audit form was developed based on the current literature and, following a pilot by the tissue viability team, minor modifications were made. Audit forms were distributed in autumn 2010 to qualified nursing staff using a random sample from a database of staff who had expressed an interest in tissue viability. The forms were anonymous and returned by post using an addressee envelope, which was included to increase the number of returns. A total of 100 audit forms were distributed, with 42 returned.

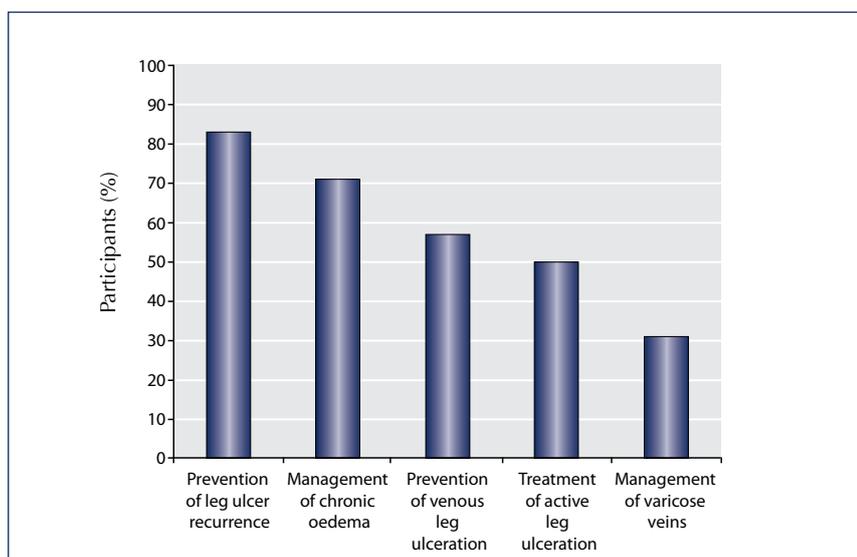
**RESULTS**

The findings from the audit are multifaceted and offer an insight into the clinician’s uses of compression therapy, the compression therapy selected and the decision making that underpins choice. This has implications for the trusts, in terms of formulary, educational requirements, and clinical effectiveness.

Reasons for the use of compression hosiery are shown in *Figure 1*. The majority (83%; 35/42) of respondents reported using compression hosiery for the prevention of leg ulcer recurrence.

The audit also revealed the range of hosiery types that were being used by respondents (*Figure 2*), with all but one (98%; 41/42) reporting use of British Standard classification off-the-shelf compression hosiery.

Factors that influenced the nurses’ hosiery selection were varied. The majority (92%; 39/42) of nurses reported selecting hosiery based on patient concordance, while 86% (36/42) reported basing the choice on levels of compression. Size



**Figure 1: Reasons given for use of compression hosiery.**

and fix of compression hosiery (83%; 35/42), and formulary listings (64%; 27/42) were the other two factors identified as influencing compression hosiery choice.

**DISCUSSION**

Annual costs for leg ulcer care are conservatively estimated to be £200 million and, with age featuring as a key predisposing factor, the UK’s ageing demographic profile will result in an increase in this financial burden (Moffatt et al, 2004; Persoon et al, 2004; Posnett and Franks, 2008). Appropriate selection of compression hosiery is likely to present considerable cost savings and, more importantly, improved quality of life for patients.

Prevention of ulcer recurrence was found to be the most common use for compression hosiery in this study, which corresponds with evidence that not wearing compression hosiery is strongly associated with ulcer recurrence (Nelson et al, 2010). The results also indicate that chronic oedema management is a common cause for use of compression hosiery. The findings also highlight that hosiery may be used for more than one reason at any one time. An example of this would be that hosiery is used for patients who suffer from venous leg ulceration and chronic oedema.

While it is acknowledged that chronic oedema negatively impacts on the healing and prevention of ulcer recurrence (Williams, 2009), the audit highlights that clinicians may not be selecting the most appropriate hosiery for chronic oedema.

While specific European Classification garments with a higher stiffness index are listed on the authors’ Trust’s formulary as the first choice for patients with chronic oedema, it was only used by 29% of respondents. This is at odds with 64% of respondents stating they are influenced by the formulary when selecting hosiery. This raises questions as to whether nurses are familiar with the current formulary or if hosiery selection is becoming ritualistic and highlights the need for further training.

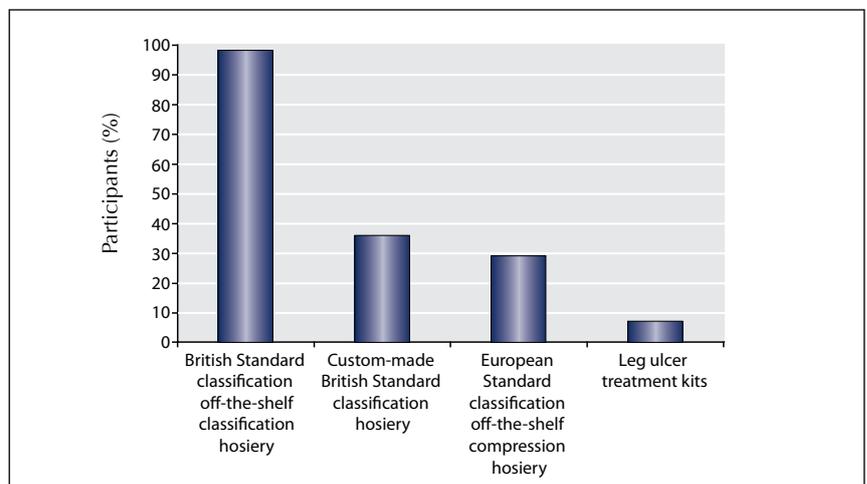
European Standard classification garments, particularly those with a higher stiffness index, are accepted as being the most suitable hosiery choice for oedema management (Lawrence, 2006; Lymphoedema Framework, 2006). Making

appropriate use of such hosiery, as currently listed in the Worcestershire wound management formulary will offer benefits in terms of economic costs and quality of life (Stephen-Haynes et al, 2012).

An educational plan has been developed for the authors’ Trusts in relation to the safe use of compression, particularly for those with chronic oedema. This grew out of a partnership between tissue viability, lymphoedema, and industry specialists. Prior to the audit, hosiery training had been delivered at the end of bandage training sessions, which may not have placed enough emphasis on the importance of appropriate hosiery selection and use. A new strategy for training was adopted in 2011–2012 and both hosiery and bandage training are taking place in dedicated stand-alone sessions. Guidelines for hosiery selection already exist within the Trusts and are now supported by guidelines for the management of chronic oedema (see www.worcestershirewoundcare.com), which aim to facilitate appropriate compression choices.

Only 7% of respondents reported using leg ulcer treatment kits, despite 50% reporting that they use hosiery to actively treat venous leg ulceration. There may be justification to promote further use of the kits, where appropriate, in place of compression bandaging to save time and, in turn, economic costs to services (Nelson et al, 2005; Stephen-Haynes and Gibson, 2006). Hosiery kits would be unsuitable for those with chronic oedema or highly exuding wounds. Further research and product development are needed in this area of care.

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**Figure 2: Types of compression hosiery used.**

**“Compression hosiery can play a vital role in maintaining leg health and should not be considered simply as a treatment option once venous disease has progressed.”**

Half of the respondents reported using compression hosiery for the prevention of venous leg ulceration. Compression hosiery can play a vital role in maintaining leg health and should not be considered simply as a treatment option once venous disease has progressed (Wounds UK, 2002). This practice should be encouraged and is supported by the clinical guidelines that exist within the authors' Trust.

### CONCLUSION

The audit revealed scope for future development, particularly in terms of the management of chronic oedema and the use of leg ulcer treatment kits to manage venous leg ulceration. It also revealed areas of best practice that should be encouraged and shared to minimise costs and improve outcomes. Future audits will be required to monitor the efficacy of training and explore areas of practice improvement.

**WUK**

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