Venous leg ulcers almost always recur unless preventive measures are implemented. Unfortunately, repeated cycles of ulceration, healing and recurrence are commonplace for many patients with this condition – recurrence rates of 70% three months after healing have been reported (Franks et al, 2016).

Venous hypertension is a main cause of leg ulcers and it is important to remember that this is often a chronic disease that, without venous intervention, requires lifelong management. Treatments for venous hypertension aim to reduce the pressure in the veins; this can be accomplished through venous intervention including surgical removal, venous ablation or sclerotherapy of the superficial/perforating veins or by applying compression therapy, detailed in Box 1 (Atkin, 2019a; 2019b).

Patient adherence with compression hosiery is vital to resolve symptoms of venous hypertension and reduce the risk of leg ulcer recurrence. However, studies suggest patient adherence is poor, with only 28% of patients achieving daily use.

Up to half of patients do not understand the cause of their leg ulceration or the need for ongoing compression therapy once the ulcer has healed. Many patients also experience difficulty applying/removing the hosiery themselves, requiring nurses to explore other approaches to help patients wear their compression hosiery. This final article in a three-part series explores how nurses can help patients to understand their treatment and improve adherence to compression therapy.

Patient adherence with compression hosiery is vital to resolve symptoms of venous hypertension and reduce the risk of leg ulcer recurrence. However, studies suggest patient adherence is poor, with only 28% of patients achieving daily use (Raju et al, 2007). Nurses have a crucial role to play in helping to enhance patient adherence so that the clinical benefits of compression therapy can be optimised. There are many issues that may affect a patient’s ability and/or willingness to wear compression hosiery; these are discussed below.

Building therapeutic relationships

Patients are frequently labelled as ‘non-compliant’ (Narayan, 2016); however, this is an outdated term that suggests patients should obey health professionals. Such labelling should be avoided, as clinicians need to build therapeutic relationships with their patients. Health professionals should speak in clear language that is easy for patients to understand, and encourage them to share in the decision making about their care. As part of their vital role in encouraging patient adherence to recommended treatments with compression hosiery, nurses should consider the questions outlined in Box 2.
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Patient knowledge
One major reason for patients not wearing compression hosiery is lack of understanding about why it is necessary (Yarwood-Ross and Haigh, 2012; Raju et al, 2007). Yarwood-Ross and Haigh (2012) found that up to half of patients did not understand the cause of their leg ulceration or the need for ongoing compression therapy to reduce the risk of recurrence once the ulcer had healed. It is, therefore, vital that nurses give patients clear and concise information that links the underlying pathophysiology of venous disease with the need for compression hosiery.

Verbal and written information, such as patient information leaflets and/or sign-posting patients to reliable online resources – for example, legsmatter.org – can improve patients’ knowledge and understanding of chronic venous disease, and help increase adherence with compression hosiery. Health professionals are also responsible for ensuring patients receive sufficient information in an appropriate format to allow them to make informed decisions in relation to their treatment options (Tandler, 2016).

Quick Fact
70% Recurrence rate of leg ulceration three months after healing

Patient choice
Giving patients appropriate choices and ensuring the correct fit and comfort of compression hosiery helps to establish daily use. There are many varieties of hosiery available and patients need to be fully involved in assessing the type that will suit them best. This includes choice of colour, style, texture and length of stocking.

Traditionally, compression hosiery has been beige or tan in colour and made from dense/opaque fabrics, but advances in materials and engineering mean there are now options that look identical to normal black ribbed socks or sheer tights. These types of garment are more discreet, which may be an important factor for some patients. Likewise, patients may prefer to have thicker/darker fabrics for the winter, and thinner fabrics for the warmer summer months.

At the same time, a balance needs to be struck between clinical need and patient preference – and nurses need to explain this to their patients (Wounds UK, 2015). Educating patients in this way will help them to understand that there can be a trade-off between their choice of product and effective care, and these conversations can help enhance the relationship between the patient and the practitioner.

Ensuring patients have the correct number of compression garments can also encourage daily use; they should be given at least two stockings for each leg so one can be worn while the other is being washed. Some patients may need more if they have problems with laundering or incontinence. They can also buy extra pairs of compression hosiery online.

Compression therapy should be replaced every three to six months, depending on the brand – or earlier if there is damage such as laddering or if, on stretching, the stocking does not return to its original shape. Ensuring patients follow the manufacturer’s care instructions for washing and drying can prolong the life of their hosiery.

Box 1. Principles of compression therapy
Compression therapy aims to decrease the capacity and pressure of blood within the superficial venous system, which improves valve function within the veins. This improves venous return by increasing the blood flow into the deep venous system.

Compression therapy also helps reduce oedema by decreasing the pressure difference between capillaries and the surrounding tissue, and transferring tissue fluid back into the vascular space. This reduction of venous pressure and oedema helps to control symptoms, progression of venous disease and recurrence of ulceration (Anderson, 2008).

Application difficulties
A further barrier to wearing compression garments is the difficulty many patients experience applying/removing the hosiery themselves (Brown, 2018). Simple tips on the correct application of compression hosiery are outlined in part 2 of this series (Atkin, 2019b).

Patients should be encouraged to apply the compression first thing in the morning when the legs are least swollen, and ideally when getting out of bed. Skin hydration is important but compression hosiery can be hard to apply immediately after moisturising the legs; as such, nurses should advise patients to moisturise at night to ensure the skin is perfectly prepared for hosiery application the following morning. Many patients struggle with the first step of getting the hosiery over their toes because they cannot bend over far enough or cross their legs to make it easier to reach the foot. A simple tip is to place the foot on the seat of a stable chair; this helps bring it in reach without the need to bend down.

Application can still be a problem for some patients. For example, those who are obese may struggle to manage even normal socks or footwear, as many are unable to reach their feet; these patients will need help from relatives or carers to apply their compression hosiery (Padberg et al, 2003).

There are other approaches nurses can take to help patients wear their compression hosiery. These can include:

- Devices to help apply/remove stockings;
- Altered compression stocking design;
- Use of adjustable compression wrap devices (Balcombe et al, 2017).

Adjustable compression wrap devices, using Velcro-type fasteners, offer a new way of applying compression therapy and have the potential to improve treatment outcomes, as well as supporting patient

Box 2. Questions to consider when supplying compression hosiery

- What is the patient’s understanding of their condition?
- What is their previous experience of compression therapy?
- How does compression affect their day-to-day life?
- What are the patient’s priorities?
- Who could help the patient apply/remove compression hosiery if necessary?
- What application aids does the patient prefer?
- Is the patient happy with the hosiery’s colour, pattern, texture or softness?
- Does the patient have at least two garments per limb?
- If hosiery is worn with a work uniform, does it match appropriately?
- Does the patient prefer open- or closed-toe hosiery?
- Can the patient afford to buy extra hosiery if needed?

Source: Adapted from Wounds UK (2015)
independence and self-management (Williams, 2016).

Patients who need a higher-class or European-class stocking can experience more problems with application, as these are naturally tighter than British Standard. One option is to use a lower class of hosiery, but this can compromise efficacy. Although some compression is better than none, nurses should consider alternatives such as using a combination of stockings to gain the desired compression value. For example, layering two class 1 stockings on top of one another is a more expensive way to obtain the compression value of a class 2 stocking, but can be a valuable alternative for some patients (see case study, Box 3).

There are many devices that help with the application and removal of compression hosiery, which are available on prescription or can be purchased by the patient directly. These include a number of variations of:

- Sliders/gliders or slip sock aid (Fig 1);
- Rigid frame systems (Fig 2);
- Rolling applicators.

Devices should be selected according to:

- The patient’s individual needs;
- Whether they need help with application and/or removal.

Discomfort

Ill-fitting stockings are uncomfortable, so it is important that health professionals who measure patients for compression hosiery have the appropriate skills, training and competence (Palfreyman and Michaels, 2009). A record should be kept of the ordering specification – brand, type, colour, length, strength and size – to aid comparison on repeat assessment and ensure accurate information is used to inform the supply of hosiery.

Table 1 outlines common problems with compression hosiery and possible solutions.

“One major reason for patients not wearing compression hosiery is lack of understanding as to why it is necessary”

Social support

Patients with active ulceration who require wound dressings receive regular nursing care but, once the ulcer has healed, the support and contact reduces and may even cease altogether (Anderson, 2015). At this point, there is often an assessment of ongoing care needs and the patient’s ability to independently apply and remove compression hosiery – essentially, their ability to self-manage. Ideally, this assessment should be made earlier in the patient’s journey, giving the practitioner time to:

- Identify potential barriers to wearing compression hosiery in the long term;
- Arrange appropriate support when healing has occurred.

It is important for patients to understand that, even though the ulcer has healed, they are not ‘cured’; the need for ongoing compression therapy to reduce the risk of recurrence of ulceration should be reiterated.

For individuals who cannot self-care, social support is vital to ensure lifelong compression is worn. Such support can be obtained from several sources, including paid or unpaid carers, funded social care and community models such as Lindsay Leg Clubs, which provide a unique community-based service in a non-medical social environment that offers peer support. This emphasises patients’ ownership

Box 3: Case study

Ethel Brown,* aged 83 years, lives alone and is independent. She has a history of a traumatic wound to her lower leg, which took two months to heal. The leg showed signs of venous insufficiency and was managed using a compression hosiery kit, which she found comfortable. While the leg ulcer was present, nurses visited twice a week to renew the dressing and apply freshly laundered compression hosiery.

The ulcer is now healed, but Ms Brown’s leg requires ongoing compression hosiery to reduce the risk of venous hypertension and subsequent recurrence of ulceration. She was provided with a closed-toe class 2 stocking, but reported that she is unable to apply this independently as the stocking is too difficult to put on. As a result, for the past two weeks she has not been wearing any compression.

Questions to consider:

- How could you encourage Ms Brown to be concordant with compression therapy?
- What further education does she need on why compression is important in maintaining leg health and reducing the risk of ulceration recurrence?
- What questions would you ask about the problems she has applying the hosiery?
- Are there aids that could help in overcoming these difficulties?
- What class and type of compression should be considered?

After conversations with Ms Brown and reiteration of the importance of ongoing compression, the nurse identifies that she has specific difficulties in placing the compression hosiery over her foot. She can reach her toes but does not feel she has the strength in her hands to pull the hosiery over her foot. To overcome this, a number of approaches are considered. The hosiery is changed to open-toe to allow the use of a slip-sock aid (Fig 1), which is provided to ease application over the foot. The compression is changed from a class 2 stocking to two class 1 stockings worn on top of one another. These are easier for Ms Brown to put on, as each stocking is a lower strength but, once in place, they provide the same pressure as a class 2 stocking. Ms Brown finds this combined approach allows her to continue to live independently and improves her concordance with long-term compression therapy.

*The patient’s name has been changed.
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Table 1. Solving common problems with compression hosiery

<table>
<thead>
<tr>
<th>Problem</th>
<th>Potential issue</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compression hosiery rolling down</td>
<td>Wrong fabric (material not stiff enough) allowing oedema to occur</td>
<td>Check fabric stiffness</td>
</tr>
<tr>
<td></td>
<td>Incorrect size</td>
<td>Re-measure/check fit</td>
</tr>
<tr>
<td></td>
<td>Unsuitable for shape of limb</td>
<td>Consider thigh-length stocking/tights</td>
</tr>
<tr>
<td></td>
<td>Oedema of the knee</td>
<td>Consider using garment with wider top band, silicone band or in combination with hosiery adhesive – but keep in mind that some patients may be sensitive or allergic to silicone</td>
</tr>
<tr>
<td></td>
<td>Poor anchoring: top band too narrow</td>
<td></td>
</tr>
<tr>
<td>Compression hosiery wrinkling around ankle crease</td>
<td>Incorrect size or change in limb size</td>
<td>Remeasure/check fit to ensure limb size has not recently reduced</td>
</tr>
<tr>
<td></td>
<td>Incorrect length</td>
<td>Check required compression value</td>
</tr>
<tr>
<td></td>
<td>Inappropriate compression value</td>
<td>Check age of hosiery – it could have lost elasticity. Ensure patient is aware of when replacement hosiery is needed</td>
</tr>
<tr>
<td></td>
<td>Loss of compression value</td>
<td></td>
</tr>
<tr>
<td>Skin irritation/damage while using hosiery</td>
<td>Incorrect size causing friction or pressure</td>
<td>Remeasure/check fit</td>
</tr>
<tr>
<td></td>
<td>Incorrect pressure/change in arterial status</td>
<td>Re-assess limb for presence of arterial disease to ensure appropriate compression value</td>
</tr>
<tr>
<td></td>
<td>Difficulties with application/removal, causing trauma</td>
<td>Consider open-toe hosiery</td>
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<tr>
<td></td>
<td>Fragile skin</td>
<td>Re-educate patient on application technique</td>
</tr>
<tr>
<td></td>
<td>Skin allergies or irritation</td>
<td>Check skin health – consider hydration and presence of eczema/dermatitis</td>
</tr>
<tr>
<td></td>
<td>Bunching of stocking around ankle crease</td>
<td>Check for allergies/sensitivities; if issues with sensitivity exist, consider latex-free/cotton-based products</td>
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<tr>
<td></td>
<td>Crowded or deformed toe</td>
<td>Consider need to change to compression wrap systems</td>
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<tr>
<td></td>
<td>Raised pressure points, such as bunion or prominent tibial crest</td>
<td></td>
</tr>
</tbody>
</table>

References


Narayan M (2016) Noncompliant and nonadherent: time to retire these labels. Home Healthcare Now; 34: 1, 47.


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of their treatment, and creates a framework for them and the local community to collaborate as partners in providing social support and holistic care (Lindsay, 2004). Such social models have been proven to enhance patient adherence and improve overall wellbeing (Stephen-Haynes, 2010).

Conclusion

Nurses are at the forefront of leg ulcer prevention and management, and the standard of care they provide plays a key role in influencing patients’ adherence with treatment (Tandler, 2016). It is therefore imperative that nurses have the necessary knowledge and understanding of compression therapy to address any issues, help steer patients towards the most appropriate care of the underlying clinical condition, and adhere to compression therapy to achieve successful clinical outcomes.

References


Narayan M (2016) Noncompliant and nonadherent: time to retire these labels. Home Healthcare Now; 34: 1, 47.


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