

# Compression Stockings:

## A Practical Approach to Common Complaints

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**V**enous leg ulcers account for an estimated 70 to 90 per cent of all lower extremity ulcers.<sup>1</sup> Venous ulcer disease is typically cyclical and chronic, with periods of healing followed by recurrence. It is not uncommon for leg ulcers to persist for years, with recurrence rates as high as 76 per cent within one year.<sup>2</sup> Graduated compression stockings are a recognized modality in the management of venous hypertension, prevention of leg edema and reduction in the recurrence of venous ulcers. Research has shown that the recurrence rates of venous ulcers are higher in patient populations who did not wear compression stockings.<sup>3</sup> While wearing compression stockings has been shown to decrease the frequency of recurrent ulcers, patient compliance is a major issue.<sup>4</sup> Challenges that have been reported by wearers of compressions stockings include discomfort, difficult application and removal, slippage, cost and poor aesthetics. This article will use a case-based scenario to address some of the challenges that have been encountered and provide recommendations, including patient education, that can assist in promoting adherence. [For more information on compliance/adherence, please refer to the article "Fostering Treatment Adherence" on page 46.]

### Case

Mrs. Jones (Mrs. J) is a 75-year-old mother of five who worked long hours in her family bakery while her children were growing up. She has a one-year-plus history of recurrent lower leg ulcerations over the medial malleolus.

Thorough assessment of her physical, social, cognitive and vascular status had previously determined a diagnosis of venous stasis disease without arterial compromise. High-compression bandages had been used in the past to facilitate wound closure. A prescription for medium-level compression stockings was provided, and Mrs. J was advised that she should wear them daily to prevent limb edema and ulcer recurrence.

A few months later, Mrs. J's daughter called to request an appointment for her mother as the ulcers had returned. During the appointment, it was noted that Mrs. J did not have her stockings on. She reported that it had been too hot to wear them during the summer months and that they were too tight so she couldn't get them on. She also said that it would be faster and more convenient for the doctor if she didn't wear her stockings to the visit. She complained that her legs were very itchy, and she had been scratching them.

Scenarios similar to those of Mrs. J are very common for those involved in providing care for patients with venous leg ulcerations. It is important to understand the reasons why Mrs. J was not wearing her compression stockings, and to develop some strategies to ensure adherence to the care plan.

### Common Complaints

Patients commonly complain that compression stockings

- are too hot
- are too tight
- with the "toe in" are too constricting

- with the “toe out” are too snug around the forefoot and uncomfortable over bunions
- often slip, causing an indentation at the top of the calf resulting in concerns about circulation
- are costly to purchase
- have an unstylish appearance
- are difficult to apply and remove

Actively listening to the patient is essential to accurately identifying the cause of complaint. Only then can a plan be developed to address each complaint and resolve the underlying issues.

### Problem: Discomfort and Slippage

In our case study, Mrs. J did not want to wear her stockings because they were too hot in the summer. Her legs would swell and it became difficult for her to put the stockings on.

### Solutions

- A professional fitter should measure the patient’s limb and fit the stocking to ensure comfort. Measurements should be done immediately after compression bandages have been removed or as early as possible in the morning to ensure minimal edema resulting from limb dependence.
- The stocking length is an important consideration to ensure comfort and to prevent slippage. A knee-high stocking should extend above the curvature of the calf, but be two finger-widths below the bend of the knee. Stockings should not be rolled down if too long, as an increased number of layers will decrease the effectiveness of the stocking.
- Stockings are also available in thigh-high or pantyhose style if slippage continues to be problematic or edema extends above the knee.
- “Skin glue” applied to the skin under the top of the stocking will help the stocking remain in place. Patients require reassurance that the glue is skin-friendly and can be easily removed.
- A rubber “non-slip-gripping” device can be used to gently reposition stockings after application and throughout the day.
- Prior to purchase, patients should be encouraged to shop around, ask lots of questions and become educated about the options available. Different stocking styles and those from various manufacturers should be tried to determine the most comfortable fit. Stockings made of lightweight materials are cooler

for wear during the hot weather. Stockings are also available with “toe in” and “toe out” styles. “Toe in” styles may be more comfortable over the forefoot and bunions.

### Problem: Cost

Stockings are expensive and require replacement every four to six months to maintain a therapeutic level of compression. Government health-care plans in most provinces do not cover the cost of stockings.

### Solutions

- To avoid delays in obtaining coverage for stockings, the patient’s benefit plans should be investigated early—prior to closure of the wound. A social worker may be able to help find additional sources of funding such as Veterans Affairs, Workers’ Compensation, etc.
- Patients should be encouraged to shop around to explore price variances and payment options. Some manufacturers offer better prices for similar stockings. Some vendors offer discounts for seniors or have special days that offer discounts for seniors.
- Families may be willing to contribute toward the cost of stockings as gifts.
- Using “rubber” donning gloves to apply stockings will minimize damage as well as make them easier to apply. Stockings that are pulled and stretched excessively during application and those with runs and holes no longer provide a therapeutic level of compression and require earlier replacement—which increases cost. Stockings without toes are less likely to be damaged accidentally by sharp nails.

### Problem: Appearance

Stockings are thought to have an unacceptable cosmetic appearance. They are often made of thick materials and come in a limited choice of colours. They are also difficult to wear with open-toed shoes, short skirts and shorts.

### Solutions

- Many manufacturers now offer stockings with a variety of colours and lengths and in various weights of fabrics, including sheer styles. Fashion pantyhose are available in various colours, and thigh-high stockings have lacy tops for a feminine appearance.
- Support stockings can be concealed by wearing regular coloured hosiery over the top of the stocking.

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### Problem: Application Difficulties

People with underlying co-morbid conditions may have difficulty with stocking application depending on their abilities. Conditions such as arthritis, back problems, large abdominal girth, lack of flexibility, inability to reach the feet, weakness in the arms and hands, poor eyesight, unresolved edema and pain can make the donning of stockings a challenge.

### Solutions

- Patients should be measured and fit for stockings by a professional stocking fitter to ensure that the right size and length is obtained.<sup>2</sup>
- Donning aids may be useful to simplify stocking application.
- Aids include
  - “rubber” gloves. The rubber in the gloves will help grip the rubber in the stocking, thus easing the stocking up the limb.

- donning frames, with and without extended handles
- slides
- silky toe and heel covers
- foot and limb sleeves made of parachute-type material for both “toe in” and “toe out” stockings
- special resistive mats
- some stockings are available with zippers, allowing the stocking to be rolled down overnight and repositioned easily in the morning.
- For some individuals, it may be appropriate for stockings to be left on overnight and changed on bath days when assistance is available.
- Stockings that are left on for 24 hours will require frequent replacement as elastic fibres will deteriorate rapidly when under constant stretch.
- Applying stockings in layers allows for easier application and maintains the therapeutic level of compression.
- A liner may be applied prior to applying a stocking with a lower level of compression. The combination of the pressure provided by the two layers will achieve the therapeutic level of compression.
- Family members or other caregivers are often available to assist with application.
- Patients and caregivers require hands-on education about how to apply and remove stockings correctly to ensure effectiveness and avoid damage.
- Before purchase, patients should ensure they are able to successfully apply and remove stockings.
- To ensure success, health-care providers must become familiar with the various products available and advocate for the client to obtain what they require.

### Support Stocking Tips for Application Difficulties



Roll the stocking down at night and just lift up in the morning.



Use a zippered stocking.



Use rubber gloves to apply stockings.



Use a stocking assistive device.



Use a nylon/cotton undersleeve and a compression stocking on top.



Apply two lower strength stockings on top of each other.

### Patient Education

Education on the rationale and proper use of compression stockings is necessary for both the patient and their family. To prevent recurrence of venous stasis ulcers, the key message must emphasize the necessity of using “compression for life.” Time must be taken to address the proper measurement and application of the compression stockings. The patient should be aware of possible challenges that may occur and potential solutions to overcome them. Resolving the patient’s concerns will help ensure that the recommended options will be accepted by the patient, which in turn will facilitate adherence to the treatment plan and improve outcomes.

### Helpful Tips for Patients

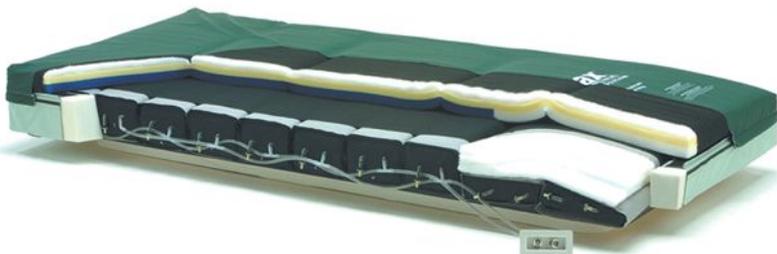
- To avoid damage from pulling and stretching the fabric of the stocking and to increase the life of the stocking, rubber gloves should be used to gently “milk” the stocking up the limb.
- Elevation of the foot of the bed will assist with edema reduction overnight (note: make sure the patient’s bed partner does not have arterial disease before recommending this option).
- Apply stockings when first up out of bed in the morning before edema accumulates in the limb. The person may need to plan to get up a little earlier to allow extra time for stocking application.
- Edema can be reduced during the day by rest periods with limb elevation *above the level of the heart*. Chairs that recline with the foot up or elevating the feet on the arm of a two-seater couch will help with venous return and the reduction of edema.
- Exercises using resistance bands to improve ankle joint flexibility and strengthening of the calf muscle pump will assist with venous return.<sup>5</sup>

### Considerations When Choosing a Support Stocking

- Ensure proper fit by using a certified, knowledgeable fitter.
  - Re-assess patient’s vascular supply as is clinically indicated.
  - Avoid in patients with significant arterial insufficiency and symptomatic heart failure.
  - Note that anti-embolic stockings *do not* provide therapeutic levels of compression.
  - Ensure that the person wearing the stocking is able to apply or has arranged for assistance prior to purchase.
- Antiembolic (TEDS) stockings are for use post-operatively when the patient is **confined to bed** and **do not provide** adequate compression when a patient is ambulatory.
  - To avoid damage, stockings should be hand-washed using cool water and a mild detergent and then laid flat to dry, or they can be placed inside a laundry

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## Solutions to stocking usage problems

Barrier	Solution
Co-morbid illness	Use gloves, aids
Difficult to put on	Spend time one-on-one to review technique
Cost	Check with different suppliers
Comfort	Options: Toe in, toe out, length, composition
Cosmetic appearance	Wear a regular sock over stocking
Forgetting	Put on before getting out of bed
Care	Use gloves to apply
Replacement	Every three to six months
Itch, dermatitis	Avoid topical steroids under stockings

bag and machine-washed using the gentle cycle. Hot water or dryer use should be avoided.

- Two pairs of stockings will allow time for stockings to be washed and dried, especially when more frequent laundering is required during hot weather.
- Creams, including cortisone products, should be applied at bedtime after stockings have been removed. Unabsorbed creams and powders will damage the fabric of the stocking. Patients should avoid the application of skin-care products that are likely to cause skin sensitivity such as those containing perfumes, dyes, lanolin, phenol alcohol, or topical antibiotics.<sup>2</sup>
- Replacement of stockings is required when they are torn or they become “easy” to apply, or every three to six months, according to the manufacturer’s directions.<sup>1</sup>
- Potential allergens such as latex can be avoided by educating patients and health-care providers about the various materials used to make stockings. Cotton stockings are available for those with allergies.

### Ongoing Care

- Initial follow-up should be arranged every two to three months to ensure that the patient is able to tolerate the level of compression and to facilitate a gradual increase to the therapeutic level.
- Some compression is better than no compression. In their analysis, Fletcher, et al., found that there was no clear difference in the effectiveness of any one compression system and that the use of a correctly applied high compression system should be advocated.<sup>3</sup>
- The best compression is the compression that the client will wear.

- Compression stockings are effective if they control the edema and not effective if they do not!
- Follow-up to monitor the level of compression, changes in health conditions and vascular status should continue on a routine basis for life.<sup>2</sup>
- Vascular and physical reassessment is required every six months if the patient has underlying health conditions such as a history of cardiac disease, renal disease, diabetes, rheumatoid arthritis, increased pain, or recurrent ulcerations.

### Summary

We have addressed some common complaints and provided some recommendations to support the use of compression stockings. By understanding the issues that patients are confronted with, care providers will be better able to address common concerns and communicate effectively to devise a mutually agreeable plan of care, thus enabling adherence. Education of the patient and family is a vital component in making compression stockings a part of their daily routine. ☺

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\*Joseph, et al, WOUNDS 2000; 12 (3); 60-67. Additional articles and studies on file and available upon request. Data on file and available on request.

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