

Compression Garments for Lymphedema - Custom or Ready-Made?

Although lymphedema can be reduced to a normal or near normal size using proper treatment techniques, the lymphatic vessels are never normal again after lymphedema was present. In addition, once lymphedema has been reduced, skin elasticity may never be regained completely since the elastic fibers in the skin are damaged from the swelling present in lymphedema. External support is therefore an essential component of lymphedema management following successful reduction of the swelling. The primary goal of compression garments is to maintain the reduction achieved during the intensive phase of [Complete Decongestive Therapy](#) (CDT); it is imperative to understand that compression garments are not designed to further reduce lymphedema.



Loss of skin elasticity following successful reduction of lymphedema

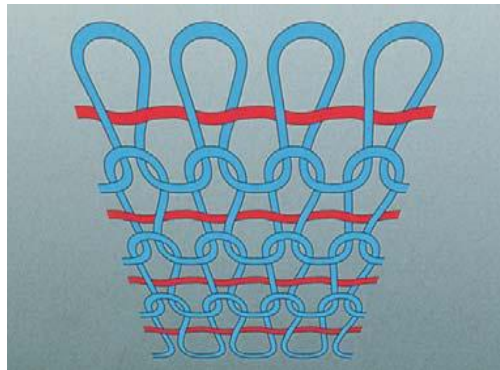
Patients are fitted for garments directly following the intensive phase of CDT by someone who is experienced, or even better, certified in taking measurements for compression garments.

The measurements should be taken in the morning when the limb is smallest; it is highly recommended to measure directly following the removal of the padded compression bandages, which are used until the garments are ready to be worn.

Selecting an appropriate compression garment is a challenging task, and many important factors, such as mobility and activity level, age, coverage area, general shape of the limb/body part, compression class, material, appearance, cost, skin sensitivity/integrity, possible presence of arterial diseases and donning/doffing issues need to be considered. Some of these factors play a major role in the process to determine if a custom-made or ready-made compression garment would be the better choice for the individual.

What is the difference between custom-made and ready-made garments?

The major difference between a higher quality compression garment and a garment of lesser quality (OTC, or over-the-counter products) is the presence of an inlay thread (red yarn in picture left), generally made of Lycra or rubber, which provides a high level of compression consistency. Both custom and ready-made garments used in lymphedema therapy contain this thread, which is woven into the material in a continuous manner. The different compression levels are achieved by adjusting the tension of this inlay thread.



Ready-made or off-the-shelf garments are made from relatively thin and sheer fabrics that are continually knitted in a circular fashion on a cylinder and thus have no seam; varying stitch height and yarn tension create the appropriate shape and size. Generally, these garments tend to be more cosmetic (no seam) and lighter in weight.



Knee-high ready-made stocking with silicone border

Ready-made garments are less expensive, easier to replace and quicker to obtain than custom-made garments and come in a variety of girths, lengths, fabrics and compression classes (please refer to an earlier entry: [The Role of Compression Garments in the Treatment of Lymphedema](#)).

Disadvantages of ready-made garments are that they may not provide enough support and are not as precise in fit as a garment, which is custom-made to the individuals' exact measurements. They also have a tendency to roll at the top if a silicone border is not added on the inside of the upper part.



Custom-made stocking with toe cap

Custom-made compression garments are generally made from thicker (but breathable) materials and knitted row by row as a flat piece, which is shaped and produced by adding or removing needles during the production process, according to the exact measurements of the patient; the flat piece is then joined by a seam to form the garment. Custom garments can be made to fit any shape, and are available in all four compression classes.

The heavier knit materials provide greater stiffness resulting in greater resistance and better containment of the swelling than ready-made garments (so-called stiffness factor).

Factors that determine the choice between a Custom and Ready-made garment:

Shape – although ready-made garments are available in a wide variety of sizes from most manufacturers, they are generally made for a limb of



Custom-made compression pantyhose

average proportion and length. Although some ready-made garments allow for an extra-wide calf/elbow and thigh/upper arm, a patient with a distorted or disproportionate limb will generally require a custom-made garment. Even if the individual circumferential measurements fall within the range of a specific ready-made garment size, some patients may have a disproportionate large calf, with measurements at the top end of the range and a relatively thin ankle with measurements on the low end of the range. The result would be a looser fit around the ankle area, which could result in a “ballooning” effect with fluid accumulating in the ankle area.

For very obese patients, custom-made garments are often the only available option; however, some ready-made pregnancy garments, which can be obtained at a much lower cost, may accommodate the measurements of these individuals.

Compression classes - the level of compression within the different classes is determined by the value of pressure the garments produce on the skin (please refer to an earlier entry on compression levels: [The Role of Compression Garments in the Treatment of Lymphedema](#)).

Ready-made garments are available in compression classes I through III, custom garments are available in all four compression levels. The highest level, compression class IV is reserved for the more severe and challenging cases of lymphedema.

Given the high compression of these garments, it is important that the ankle-brachial index (ABI) of the individual is tested by a health care professional. The [ABI](#) compares the blood pressure of the ankle to that of the arm, and is used to determine if peripheral arterial disease (PAD) is present. While an ABI index of less than 0.5 presents a general contraindication for compression therapy, the ABI should be greater than 0.8 if a compression class IV garment is prescribed.

A normal resting ankle-brachial index ranges between 0.9 and 1.3, which means that the blood pressure in the ankle area is the same or greater than the pressure in the arm.

Donning issues - some patients may have difficulty in donning a garment, especially a compression class IV garment (age, mobility). In these cases it is possible to layer two garments of lesser compression - for example, two compression class I garments on top of each other can be used to achieve up to 40 millimeters of mercury (mm/Hg) pressure. With the first garment applying 20-30 mm/Hg, the second garment will add about two thirds of the pressure applied by the first garment. Layering of two compression garments also increases the stiffness factor, which results in greater resistance and better containment.

A second, less desirable option, would be the addition of a zipper to aid donning of compression garments. The disadvantages of zippers are that they are difficult to close once the garment is in place; they make the garment more bulky and the cosmetic results are less desirable. Another important issue is wearability of a zippered garment – zippers do not stretch which makes these compression garments less comfortable to wear.



Layering of two compression garments

Skin integrity – if wounds or other skin conditions are present, it may be better to go with a more breathable custom garment. In some cases it may be necessary to apply an under-stocking (silk, cotton) to avoid slippage of wound dressings while donning the garment. Compression garments containing silver may present a very good option; silver threads woven into the garment have naturally antimicrobial properties, prevent odor and are commonly used in the treatment of wounds.

In some cases, a zipper option may be considered if wounds are present.



Cosmetics – appearance of a garment is very important for many patients. In some cases it may be necessary to choose a less desirable option (no seam, garment color issues, less bulky garment) to further patient compliance. It is important to understand that there is no therapeutic value in a compression garment, which is not worn by the patient for cosmetic reasons.

More on compression garments in following postings, such as care of compression garments and tips on donning and doffing and how to hold garments and bandages in place in challenging cases.

Additional Resources:

[Compression Hosiery in Lymphedema](#)