Chronic ulceration of the leg is a painful and socially isolating condition that incurs considerable expense to the NHS (Taylor and Smyth, 2001). Leg ulceration is a common condition affecting 1% of the adult population at some time in their life (Cullum and Roe, 1995).

The effective treatment of lower limb ulceration is highly dependent upon establishing the aetiology of the wound and the identification of other associated conditions that may have an adverse effect on healing (Vowden and Vowden, 2001). Leg ulcers can be venous in origin, arterial, or a mixture of both, and may result from other causes, such as skin malignancies, blood disorders, infection, metabolic disorders, lymphoedema, and iatrogenic and self-inflicted ulceration (Moffatt, 2001).

Epidemiological studies have consistently shown that vascular disease, and in particular venous disease, accounts for about 70% of lower limb ulcers (Callam et al, 1985; Vowden and Vowden, 2001).

### COMPRESSION

It has long been recognized that graduated compression, from toe to knee, is an effective way to manage venous leg ulceration (Moffatt, 2001). The aims of treatment are to: reduce blood pressure in the superficial venous system; aid venous blood return to the heart by increasing the velocity of flow in deep veins; and reduce oedema by reducing the pressure differences between capillaries and tissue.

Bandages can be described as different types and classes (Table 1). The type of bandage chosen will depend on many things: clinical effectiveness; patient choice; patient compliance; local protocols and guidelines; availability; nurse’s knowledge and skills in application; and cost-effectiveness.

There are several ways of achieving compression. Four-layer bandages work on the principle that elastic bandages absorb the energy from the calf muscle and then spring back into the original position, forcing blood back to the heart. They are designed to stay in place for a week and are indicated for immobile venous ulcer patients or those with an unusual shaped leg. Long-stretch bandages work on the same principle of elastic bandages, and can also be left in place for a week. Long-stretch bandages consist of padding and/or crepe, and long-stretch bandage (one compression bandage), whereas multilayer bandages consist of padding, crepe, compression bandage, and cohesive compression outer layer (two compression bandages). The other system available is the short-stretch system, which is described below.

There appears to be a ‘friction’ of compression therapy between professionals, with one camp advocating the use of multilayer or long-stretch bandages, and a second camp working only with short-stretch bandages (Hampton, 2001). This is because certain

### Table 1. Types and classes of bandages available

<table>
<thead>
<tr>
<th>Bandage classification system</th>
<th>Types of compression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1: Lightweight conforming stretch bandage (retention)</td>
<td>Class 3a: Light compression (14–17 mmHg at ankle)</td>
</tr>
<tr>
<td>Type 2: Light support bandage (support)</td>
<td>Class 3b: Moderate compression (18–24 mmHg at ankle)</td>
</tr>
<tr>
<td>Type 3: Compression bandage (compression)</td>
<td>Class 3c: High compression (25–35 mmHg at ankle)</td>
</tr>
<tr>
<td>Types of compression</td>
<td>Class 3d: Extra high compression (up to 60 mmHg at ankle)</td>
</tr>
</tbody>
</table>

Source: Thomas (1990)
bandage systems are used to the exclusion of all others, e.g. when the four-layer system started to be used widely some healthcare practitioners never used any other system. However, a bandage system should be selected for the patient, not through preference of the nurse. Both bandage systems have been shown to be equally efficient in healing venous ulcers (Scriven et al, 1998; Vowden, 1998).

The selection of the bandage must only take place when there is an understanding on how the different systems work, along with an holistic assessment of the patient and his/her individual needs.

**SHORT-STRETCH COMPRESSION**

Short-stretch bandages and long-stretch bandages behave in very different ways (Williams, 2001). Short-stretch bandages are applied at full stretch and create a firm ‘tube-like’ structure around the calf. When the calf muscle contracts it rebounds against the walls of the firm tube and this pressure causes the blood in the deep veins to progress towards the heart. The firmness of the tube discourages the backflow of blood that causes hypertension, thereby reducing ankle oedema (Hawkins, 2001).

Short-stretch bandaging has a low resting pressure, with only temporary high levels of compression present when the patient is active. Therefore, this form of compression therapy can be used with caution in patients presenting with mixed aetiology leg ulcers, as the wound may not be a pure venous ulcer but may be mixed with, for example, arterial disease...

*Figure 1. Actico short-stretch bandage in place.*

Hot, sweaty and bulky. There is greater patient compliance because of simple, yet important, things such as patients being able to wear their normal footwear. There is a lower resting pressure and this is much more comfortable to patients, especially at night.

Short-stretch is applied at full strength and this reduces the risk of over-compression. It is also very versatile, being able to be used for most limb sizes.

**ACTICO COMPRESSION BANDAGE**

Actico is a cohesive short-stretch bandage designed to be used with a padding layer as a compression system for the treatment of venous leg ulcers. It consists of 60% cotton, 39% polyamide and 1% elastane fibres (Figure 1).

The limited extensibility of the bandage creates a semi-rigid cuff against which the calf muscle works to promote good venous return. The cohesive nature of the bandage keeps it in place for up to 7 days. Actico is 10 cm wide and 6 m in length when stretched. It has been available on the Drug Tariff since July 2000 (Figure 2).

It was thought that short-stretch bandages only work effectively when patients are fully mobile; however, they can also be used on the less mobile patient (Hawkins, 2001). Weight bearing alone activates the foot pump which is situated in the sole of the foot of all short-stretch bandages.

**Application of the Actico bandage**

*Before bandaging:* A full holistic assessment, ankle brachial pressure index (ABPI) and ankle circumference measurement are required before applying Actico.

As with all compression systems, caution is required where cardiac overload is suspected and with patients with diabetes and where arterial disease is present. Actico can be applied on a patient with an ABPI of greater than 0.8 and can only be applied on a patient with an ABPI less than 0.8 under strict medical supervision.

**Ankle measurements:** If ankle circumference is 18 cm or less, the patient is not suitable for Actico bandaging unless padding is used to increase the ankle circumference. If the ankle circumference is 18–25 cm, one padding layer and one Actico bandage are needed. If ankle circumference is over 25 cm, one padding layer and two Actico bandages are required. **Applying the padding layer:** When applying the padding layer, the nurse must:
ACTICO: A SHORT-STRETCH BANDAGE IN VENOUS LEG ULCER MANAGEMENT

Ensure that the foot is flexed at 90 degrees so that the bandage remains smooth
Pad and shape the limb with padding, ensuring that the bony areas are protected
Re-measure the limb so that the correct combination is chosen. After the padding layer is applied it may give patients an ankle circumference of greater than 25 cm, so they may need two layers of Actico bandage.

Applying the Actico bandage
For ankle circumferences between 18 cm and 25 cm, the Actico bandage must be applied in a simple spiral from outside the limb to the inside. This is felt to be more comfortable for the patient, but if the bandager feels that bandaging from the inside to the outside facilitates easier and more accurate application, then this is acceptable. Bandaging must begin at the base of the toes using two turns to secure the bandage. Compression to the foot may be applied if the presence of oedema is suspected. A figure of eight must be complet- ed at the ankle and it must be ensured that the heel is covered. Bandaging up the leg then continues, using a simple spiral at full 100% stretch with a 50% overlap, ensuring that the bandage is held close to the limb at all times.

For ankle circumference greater than 25 cm, apply the first Actico bandage in a simple spiral from inside the limb to the outside, using the same method as above. A second Actico bandage is applied in a simple spiral from outside the limb to the inside. Bandaging must begin at the ankle, using two turns to secure the bandage. Bandaging is continued up the leg in a spiral, at full 100% stretch, with a 50% overlap in the opposite direction to the first bandage ensuring that the bandage is held close to the limb at all times. Any excess bandage should be cut away, and the bandage layers bonded together by applying a gentle pressure along the full length of the limb. The heel and foot areas should be reinforced if it is felt necessary.

Normal footwear may be worn with this system, as the foot pump and the calf muscle pump are activated to promote a good venous return. They are not designed to be washed, but can stay in place for up to 7 days.

Advantages of Actico system
The Actico bandage has all the advantages of the short-stretch bandages. It is also cohesive which means it will stay in place better. Its length of 6 m ensures that long or large limbs can be treated with just one roll. For shorter or smaller limbs it can be cut to size.

CONCLUSION
Short-stretch bandages have been the main choice of bandage in Europe for over 40 years and their use is increasing in the UK (Williams, 2001). Healthcare professionals are now in a position to select a bandage system that is most appropriate for their patients following an holistic assessment. The selection will often be a short-stretch bandage because it is more comfortable for the patient, safe to use, easy to apply and stays in place well. Actico is a safe, comfortable, practical bandage system that will give healing rates comparable to other bandage systems (Duby et al, 1993).

KEY POINTS

- Compression bandaging is the key in the management of venous leg ulcers.
- Compression can be achieved by using multilayer, long-stretch and short-stretch bandages along with compression hosiery.
- Short-stretch bandaging has been the main system of compression used in Europe since 1960.
- Healing rates of venous leg ulcers are comparable with other bandage systems.
- The Actico bandage is safe, comfortable, practical and will stay in place for up to a week because of its cohesive nature.

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Figure 2. Actico short-stretch bandage has been available on the Drug Tariff since July 2000.