

# Evaluation of a new two component inelastic compression bandage kit

*The focus of compression bandaging has been directed towards ease of application, comfort, tolerability and effectiveness. This article reports on a two-centre non-comparative evaluation of the new two component short-stretch bandage kit (Actico®2C) in a case series with the aim of establishing how comfortable and effective the bandage is in a real life situation.*

**Key words:**

Lower leg venous ulceration  
Short-stretch compression bandage  
Static stiffness index  
Venous ulceration  
Actico®2C

**R**esearch on the negative effects of leg ulceration on patients' quality of life and how this can be dramatically improved with effective treatment and compression therapy has been widely published<sup>1,2</sup>. Compression bandaging for venous disease has been used for millennia<sup>3</sup> and, over this time, new bandages and compression devices have been developed. In addition to the effectiveness of the compression system, the focus has been directed towards ease of application and user comfort.

Venous leg ulceration is due to sustained venous hypertension; blood from the limb is not effectively returned to the heart due to the failure of valves in the perforating veins<sup>4</sup>. Arterial leg ulcers occur as a result of reduced arterial blood flow. The most common causes of poor blood supply are atherosclerosis or peripheral vascular disease<sup>5</sup>. Mixed aetiology ulcers can therefore be due to either poor blood supply to the lower limb or poor blood removal from the lower limb<sup>6-8</sup>.

Research has suggested that compression with short-stretch inelastic bandages may be used safely and effectively in this group of patients where accurate assessment has been conducted and care supervised by a specialist practitioner<sup>9</sup>.

## Compression therapy

Short-stretch bandages are applied at full stretch to achieve the required sub-bandage pressures to reduce oedema and promote ulcer healing<sup>10</sup>. Newer systems comprise bandages with squares or circles to guide the application of correct pressures<sup>11</sup>. Recent studies have concentrated on investigating the difference between elastic and inelastic bandage systems and static stiffness indices<sup>12,13</sup>. An inelastic or short-stretch bandage will cause a higher hydrostatic pressure increase<sup>12</sup>. A good static stiffness index (SSI), the difference between the sub-bandage pressure on the distal lower leg minus the lying position, is achieved

with short-stretch systems<sup>12</sup>. The benefits of alternating the high working pressures and lower resting pressures to aid venous return and the pumping action stimulated by the foot and calf muscles have been well documented<sup>14</sup>. These effects have also been beneficial in assisting lymph flow in the presence of oedema<sup>15</sup>.

Patients who are non-concordant in wearing compression bandages may merely be reflecting a desire to live a normal lifestyle, rather than living with bandages that are uncomfortable or unsightly to wear, or that hinder movement<sup>16</sup>. Indeed, the practical aspects of safely managing patients can present other challenges:

- Patients: pain, concordance, ability to wear normal clothing, whether or not the wound will heal
- Clinicians: ease of application, treatment choices, training, patient concordance

Thus, a product that helps address some of these challenges would be beneficial.

## The study

When a new product enters the market, practitioners must be assured that it 'does what it says on the tin'. Compression bandaging efficiency testing is undertaken in the laboratory before patient use, but only patient and nurse experience will establish its effectiveness, and patient tolerability.

This article reports a two-centre non-comparative evaluation of a new bandage system, Actico®2C (Activa Healthcare UK [known as Rosidal TCS outside the UK]). This non-comparative case series evaluated the comfort and effectiveness of the bandage in the 'real life' situation, and formed part of a larger international study of 95 patient outcomes using Actico®2C. The bandage system is latex free and comprises a layer of foam padding with a natural cotton skin protection layer in a single bandage

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**Box 1: Case studies**



Figure a: The wound on day of first application



Figure b: The wound after 18 days of treatment with Actico®2C

**Case study 1**

A 78-year-old gentleman had a 29-year history of leg ulceration (mixed aetiology). High exudate levels necessitated daily dressing changes; management interventions had included super-absorbent dressings, skin protection and a 'light' compression system (3M™ Coban™ 2 Compression System) for the mixed aetiology vascular status.

On entry to the study, the wound measured 18.76cm<sup>2</sup> (Figure a). The Actico®2C bandage kit was applied over a super-absorbent dressing, which was changed every four days. Figure b shows the wound 18 days after treatment, when exudate volumes had decreased, the wound appeared shallower and had reduced in size to 13.67cm<sup>2</sup>.

Although the bandages tended to unravel a little at the top of the leg, this was managed by taping that did not affect the tissue or healing. The patient described the bandage system as being "perfect", commenting that "it did not stick to the other leg or bed sheets overnight."



Figure c: The wound on day one of application of Actico®2C



Figure d: The wound after 25 days of treatment with Actico®2C

**Case study 2**

This 81-year-old female had a history of depression and multiple co-morbidities. Vascular status could not be recorded using the dopplex® ABILITY system, although handheld Doppler produced biphasic, dull sounds. History confirmed that the ulcer was a mixed venous arterial ulcer. Her ulcer was painful and moderately exuding; pre-study treatment included wool, Setopress® and 3M™ Coban™ 2 over the dressings to manage the exudate, and skin protectant for the peri-wound area. The patient had been non-concordant and did not like compression. It was decided to try the Actico®2C compression bandage kit over the same dressings to manage the exudate, alleviate the pain and to encourage ulcer healing. The patient did not feel that the bandage was any better or worse, although she scored the new bandage as being less tight than the previous regimen and she agreed to remain in the evaluation. Figure c shows the wound on day one of the bandage application and figure d shows improvements in wound condition and the peri-wound at day 25. The clinician preferred this system over the alternative bandages as it helped to resolve concordance issues.

which distributes compression evenly, and a second short-stretch compression layer. It can be used for up to seven days and is available in kits for ankle sizes 18–25cm and 25–32cm.

One urban and one semi-rural site in the United Kingdom (Eastbourne Wound Healing Centre [EWHC], and the Central London Community Healthcare NHS Trust Leg Ulcer Clinic [CLCH]) participated. The sixteen patients recruited were aged between 22 and 89 years old; aetiologies included venous leg ulceration, mixed aetiology ulceration and stage one oedema. All had a history of non-concordance or were happy to evaluate another bandage for comfort. The evaluation period was two to six weeks; change of compression bandage was determined by condition, but where possible, remained in place for up to seven days. These patients were all fully informed of the evaluation, each agreed to take part and provided signed consent. Approval for all evaluations at the EWHC required the approval of the local ethics committee.

Patient assessment included Doppler ultrasound to determine ankle brachial pressure index (ABPI), limb size, general health and co-morbidities.

**Application**

Short-stretch bandages are applied at full stretch which can be recognised when the bandage 'locks out'. This makes pressure indicators redundant. When applied, the bandage does not expand when the calf muscle expands, therefore the force of the muscle is directed back into the leg and not wasted by expanding the bandage<sup>17</sup>. The Actico® 'Safe-Loc' system®, a key feature of the kit, ensured that bandages were applied at full stretch.

As with all compression bandage systems, extra padding protection of bony prominences and vulnerable limbs is essential. Where the ankle circumference is less than 18cm, it is recommended that a system that allows for variation of the bandage layers with single units such as Actico® and Flexiban®.

**Results**

Sixteen patients completed the evaluation. The outcomes were:

- Two patients completely healed at two weeks (12.5 per cent)
- Two patients completely healed at six weeks (12.5 per cent)



Figure 1: Actico®2C on application and one week later showing minimal slippage

- One patient achieved >50 per cent healing at six weeks
- One patient moved into hosiery at two weeks
- One patient moved into ActiLymph® Class 2 hosiery due to unmanaged oedema and is now doing well
- Seven patients improved during the evaluation and continued with Actico®2C

All patients described the application and the wearing of Actico®2C as 'very comfortable' and there were no problems with concordance. The bandages were comfortable both during the day and at night, and only minimal slippage was noted (Figure 1). The ability to self-bandage was noted by patients, and all reported a reduction in oedema and consequently, an improvement in ankle movement which allowed them to wear shoes. The new foam layer of Actico®2C has a cotton, skin friendly layer which combines well with the use of emollients. No adverse skin reactions were noted during and after the evaluations.

Comments from patients included:

"Most comfortable bandage I have ever worn"

"Much better with wearing shoes than any other bandage system"

Comments from nurses included:

"Feels very light and easy to use"

"The same easy method of application with 'Safe-Loc' as Actico"

"The comfort layer conformed well to the leg"

Two patients continued using it once the evaluation finished.

The system presents a potential solution to low concordance and mixed aetiology, as illustrated by the case studies (Box 1), part of the EWHC evaluation.

### Conclusion

The nurses reported on the ease of use and feeling confident with the simple 'Safe-Loc' application. Patients' needs and lifestyles should always be taken into consideration when selecting treatments with compression bandaging. This new two component leg ulcer kit has proved to be easy to use, effective and comfortable and is suitable for the treatment of venous leg ulcers with or without mild oedema, and ulcers of mixed aetiology with caution. As evidenced in the case studies, 'light' compression systems are not always as comfortable for patients as might be expected. However, the patients in this case series found Actico®2C comfortable, a factor that promotes concordance.

There is an argument for clinical positioning of Actico®2C in the treatment of venous ulcers with uncomplicated oedema.

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