

Sub-bandage pressure measurements and usability between three compression bandage systems*

AUTHORS HANNAN R. ⁽¹⁾, BOHBOT S. ⁽²⁾

⁽¹⁾ Consulting Northampton, Northampton, UK, ⁽²⁾ Laboratoires URGO, Chenôve, France

INTRODUCTION

It has become common practice to treat leg ulcers using the multi-layer compression systems.

A new and innovative two layer system, KTwo® (2LB) has been developed and considered effective in a German study concerning the measurements of sub-bandage pressures on healthy volunteers and in a French clinical trial including patients with recurring venous leg ulcer.

In addition, a test of usability was undertaken in UK to consider the reproducibility of the correct therapeutic pressures and its acceptability.

AIMS

To investigate how easy or difficult nurses found it to apply the new 2LB without training and to compare the pressures achieved between the new 2LB and 2 other compression systems. This study also measured the following points: the time taken to apply the bandages and the nurses opinions concerning patient comfort with the new 2LB and impact on quality of life.

MATERIAL AND METHODS

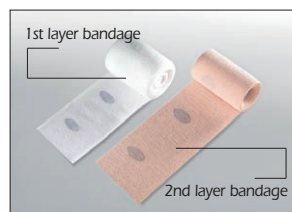
A four layer system (4LB)**, a short stretch system (SSB)** and the new 2LB**, applied according their recommended application technique. The new 2LB was applied twice due to the fact that it is a new bandage system (The bandages were randomised as regards the order of application in order to reduce the bias).

32 nurses with experience in compression bandage systems applied the bandages on a female healthy volunteer (with an ankle circumference of 21 cm).

The sub-bandage pressures were measured using one Kikuhime pressure monitor (placed at point B1).

DESCRIPTION OF THE NEW 2LB

The new 2LB was designed to divide the pressure across 2 separate layers. The first innovative layer, a compression wadding using unique technology enabling binder-free combination of a wadding with a knitted layer, offers a degree of light compression and avoids high pressure points on bony prominences. The second layer, a cohesive stretch bandage, provides the additional required pressure to obtain 40 mmHg at the ankle and ensures the compression system stays in place for up to 7 days. These 2 layers have a graduation system designed to enable visual assessment that the product has been applied correctly: an "etalonnage" (printed elliptical designs which form proper circles when stretched correctly).



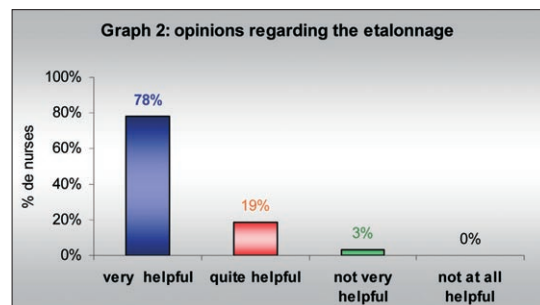
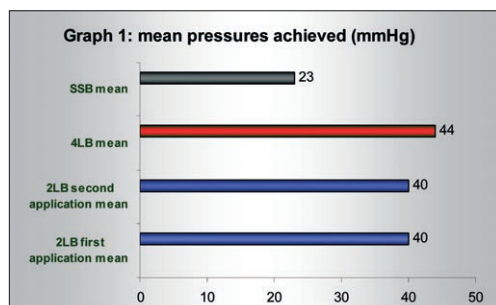
Unstretched bandages



Stretched bandages

RESULTS

The pressure measurements show that the majority of nurses achieved a mean pressure of 40mmHg without training with the new 2LB due to the etalonnage and the pressure did not change between 2 applications. The 4 LB achieved a mean pressure of 44 mmHg. With SSB, the mean pressure achieved was 23 mmHg due to difficulties in application technique regarding this short stretch nature. (graph 1) On the first application, 94% of nurses achieved a therapeutic pressure minimum of 30 mmHg with 2LB and 4LB, but the majority of nurses (75%) did not achieved a pressure of 30 mmHg with SSB. There is no significant difference between 2LB and 4LB and both brands are significantly better than the SSB.



Regarding the application time, the 4LB was the slowest (3m 46) and the SSB the quickest (1m 50). For the 2LB, the application time was between 2min 16s and 2 min 35s. Considering they were unfamiliar with the new 2LB, nurses are bound to get quicker with practice. Concerning the nurses opinions regarding the use of compression bandaging systems in clinical practice, the results suggest that this new 2LB will offer the required therapeutic pressures and a safe and accurate compression due to the etalonnage (graph 2). Nurses identified the potential benefits to the new 2LB: reduction bulk, better comfort, ability for patients to wear their shoes. It will be easier to apply due to the etalonnage (with 63% of nurses expressing this point of view), and quick to apply. Nurses felt that patient concordance will improve with the usage of 2LB.

CONCLUSION

These results suggest that this new 2LB will achieve good therapeutic pressure levels, with the nurses ability to gauge this being enhanced through the etalonnage system, a safe method assuring the optimal therapeutic compression. It will be slim line and easy to apply, enhancing patient comfort and concordance. This new 2 layer bandage system is designed to spread the pressure whilst aiding the application process through the guidance of the etalonnage. Thus the new 2LB will represent a suitable alternative to other multi-layer or short stretch compression systems.

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** Brand names: 2LB is KTwo® from laboratoires URGO, 4LB is Profore® from Smith and Nephew, SSB is Actico, associated with Flexiban, from Activa Healthcare.