INTRODUCTION

Venous leg ulcer (VLU) prevalence is increasing in relation to the populations’ age, and NICE(12) stated that 60-80% of leg ulcers treated in the community environment; therefore the focus remained on the other therapies stated. To achieve an ankle pressure of 40mmHg is the accepted gold standard in compression provision of evidence-based treatment combined with the ability to give patients choice,(2) with one elastic component, versus a 4LB system, which resulted in complete wound healing, of VLU, in 48% and 38% respectively which supports these findings. A comparative study of 4LB, two-layer multi-component system and SSB applied to healthy volunteers concluded the two-layer system was more tolerable and comfortable than the other systems. Additionally, 3/24 of the healthy volunteers who were randomly allocated the 4LB system, discontinued due to pain at day 37, although no further rationale for this was given. Furthermore, 187 patients from 3 countries, randomised into 2 groups easily tolerated a two-layer system(9). A clinician needs to be skilful and expert with application to enable success and it was established that KTwo, a two-layer system demonstrated superiority for ease of application and faster wound healing compared to compression stockings(10). Although quicker to apply SSB have the ability to lose pressure over the first 24 hours(10), and the sub-bandage pressures are not sustained as long as a 4LB or two-layer bandage system(11). This results in more frequent reapplication due to slippage which is indicative of a negative impact on cost and clinicians time. Using Quality Adjusted Life Years as a measure, hosiery was given a 95% probability of being the most economical treatment within a trial analysis but the two-layer bandage had the highest probability of both efficacy and cost effectiveness(12). This indicates that the clinician should consider the choice and once the priority outcomes have been agreed, the final treatment choice can be determined in line with trust policies and patient needs.

METHOD

A literature search was carried out to explore the most up-to-date publications allowing a critical analysis to be performed. This comprised the most commonly used compression systems as there are a number of different compression systems available. These include intermittent pneumatic compression (IPC) pumps, hybrid devices, that provide sustained and intermittent compression, four-layer bandage systems (incorporating long-stretch bandages), 2-layer bandage systems (incorporating short-stretch and long-stretch bandages), short-stretch bandage systems (SSB), Zinc paste Unna’s boot and single or 2 layer compression hosiery. The efficacy of each system in relation to healing rates, patient tolerability, ease of application, suitability and cost effectiveness were explored. The prevalence of use of IPC is limited within the community environment; therefore the focus remained on the other therapies stated.

RESULTS

To achieve an ankle pressure of 40mmHg is the accepted gold standard in compression bandaging based on work undertaken by clinicians at Charing Cross Hospital in the late 1980’s.(1) In response to the findings from this original work, a range of treatment options have been developed by commercial companies producing a wide range of products. Ideal practice is provision of evidence-based treatment combined with the ability to give patients choice,(8) whilst achieving the required level of compression and sub-bandage pressures is a challenge due to the extrinsic patient and clinician factors. These patient factors can include functionality of the calf muscle and foot pumps, the shape of the limb and their tolerability of compression systems(9). Following a full assessment and compression therapy is recommended, it can be advantageous to have various compression systems to aid patient compliance. Often however, factors that influence the clinician’s decision making can be impacted by the resources available to them, the application technique and their level of skill(10). All of the above influences may result in the selection of an inappropriate treatment choice resulting in poor patient outcomes, hence, a waste of resources with a negative impact on quality of life.

A systematic review, of 36 studies, highlighted that compression hosiery was equivalent to 4LB for ulcer healing plus superior to SSB(11) and the Cochrane Collaboration(12) that more patients heal in compression stockings than with SSB(12). It has been demonstrated that SSB do not heal as many patients completely at 3 months like 2-layer compression hosiery(13) or heal as fast as 4LB(14). 484 participants were utilised for a RCT to consider the efficacy of two-layer compression hosiery versus 4LB which demonstrated no difference with time-to-healing for either treatment, but the recurrence rates were higher in the bandaging group(15). The Cochrane Collaboration also reasoned that simple component methods are less effective than multi-component methods and that multi-component systems seem to be more effective when one component is elastic.(16) Lazareth et al(8) compared the efficacy of a two-layer bandage system, with one elastic component, versus a 4LB system, which resulted in complete wound healing, of VLU, in 48% and 38% respectively which supports these findings. The Cochrane Collaboration also reasoned that single component methods are less effective than multi-component methods and that multi-component systems seem to be more effective when one component is elastic. Lazareth et al(8) compared the efficacy of a two-layer bandage system, with one elastic component, versus a 4LB system, which resulted in complete wound healing, of VLU, in 48% and 38% respectively which supports these findings. A comparative study of 4LB, two-layer multi-component system and SSB applied to healthy volunteers concluded the two-layer system was more tolerable and comfortable than the other systems. Additionally, 3/24 of the healthy volunteers who were randomly allocated the 4LB system, discontinued due to pain at day 37, although no further rationale for this was given. Furthermore, 187 patients from 3 countries, randomised into 2 groups easily tolerated a two-layer system(9). Using Quality Adjusted Life Years as a measure, hosiery was given a 95% probability of being the most economical treatment within a trial analysis but the two-layer bandage had the highest probability of both efficacy and cost effectiveness(12). This indicates that the clinician should consider the choice and once the priority outcomes have been agreed, the final treatment choice can be determined in line with trust policies and patient needs.

CONCLUSION

There remains a lack of clarity as to which is the most effective form of treatment to achieve the best patient outcomes. When balancing out the evidence it indicates that although SSB are quicker to apply they do not provide the best healing rates or reduction in wound surface area.

There is a plethora of recent articles that demonstrates more robust evidence is required. This paper has concluded that 2-layer bandage kits and 2-layer hosiery kits are as effective in relation to healing rates but can additionally support a more accurate application for both the clinician and autonomous patient.

REFERENCES