Profore latex-free multi-layer compression system

The prevalence of latex allergy has increased in the past 20 years and remains a particular problem for healthcare professionals who often come into contact with latex products. The development of a latex-free multi-layer compression bandage system provides a welcome alternative for both patients and professionals. In this article the authors present one patient's experience of the Profore latex-free multi-layer compression system and find that the patient and nurses found the product easier and more convenient to use than the latex version of the product.

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KEY WORDS
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Leg ulcers

Compression bandaging has formed the cornerstone of leg ulcer treatment for venous and mixed aetiology ulcers for several years. Graduated compression bandaging is a successful non-curative treatment for venous leg ulceration (Cullum et al, 2001). The benefits for the patient include reduction of pain, reduction of oedema and subsequent improvement in quality of life. The Profore multi-layer compression bandage system was developed by Smith & Nephew Wound Management (Hull) and has become a major component in the management of leg ulceration in the UK. This product review will examine one patient's experience of treatment using Profore latex-free bandages and will discuss the growing problem of latex allergies, particularly among healthcare workers.

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Latex allergy

Latex allergy has been recognised for many years and the increase in the use of products that contain latex during the 1980s led to a greater awareness of the problems associated with latex allergy. Exact numbers of healthcare professionals and patients affected by latex allergy are not known but the numbers are thought to be significant. A move to latex-free products has occurred in recent years and the production of a latex-free compression bandage system will bring health and safety benefits to both patients and staff.

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Natural rubber products have been used widely for many years. Allergic reactions — especially immediate reactions — have only been recognised in the past 27 years, with the first report appearing in 1979 (Bandolier, 2006). The reasons for this apparent increase and the emergence of large numbers of latex-sensitive people are unknown, but there are two possible explanations. During the 1980s the use of latex medical products increased tremendously in response to the threat of AIDS and a more general recognition of the possible transfer of infectious agents through contact with body fluids. As a result, the use of items such as latex gloves increased among all healthcare professionals to protect them from exposure to patients' body fluids. Today, doctors, nurses and laboratory personnel use latex gloves frequently whereas a decade ago their use was much less prevalent.

This sudden increase in demand for latex products — especially latex gloves — has meant that new manufacturers and new industrial processes have evolved and that new or subtly different sources of raw material are being used. Products used today may have higher concentrations of allergens as a result of some or all of these changes, or new latex allergens may have been created. One thing is certain, there is a very high population in regular contact with latex products. About one million people work in the NHS, and a significant proportion are subject to exposure to latex — as are many more patients.

In a study of allergies among healthcare workers (Yassin et al, 1994), 224 hospital employees were interviewed and skin prick tests

performed to test for common allergens; one extract was derived from a non-latex synthetic glove and four from different latex glove extracts. There were 136 nurses, 41 laboratory technicians, 13 dental staff, 11 physicians, six respiratory therapists and 17 housekeeping and clerical workers included in the study. All tested negative for the non-latex glove but 38 (17%) tested positive for latex extracts (*Table 1*). Those subjects who were latex positive had a significantly greater history of bronchial asthma, reported significantly more symptoms when using latex gloves (urticaria, rash, itching, sneezing, nasal congestion, itchy watery eyes and cough), and were significantly more likely to test positive for common allergens (pollen, cat epidermis and dust mites).

The prevalence of latex sensitivity of 17% in this study has been supported by abstracts which have reported prevalences of 14% in healthcare workers (Bandolier, 2006). The prevalence of latex allergy in patients is unknown but with greater exposure to products containing latex over recent years, it is likely to be similar.

The development of Profore latex free

The increased use of compression bandage systems over the past 10 years for patients suffering from leg ulceration may result in increased exposure to latex for both healthcare workers and patients. The Profore multi-layer compression bandage system was introduced in the UK by Smith & Nephew and has become a market-leading product in the multi-layer compression system category. The efficacy of this product is supported by several research studies (Callam et al, 1985; York Health Economics Consortium, 1998; Moffatt et al, 1999).

A latex-free formulation of the Profore multi-layer compression bandage system has now been produced – Profore Latex Free (LF) (*Figure 1*). *Table 2* highlights the components and indications of Profore LF. It has been developed in response to a growing concern from healthcare professionals about the potential danger of latex allergy and hypersensitivity. It is thought that Profore LF provides the same effective compression and sustained results as the standard Profore multi-layer compression bandage system, but its latex-free formulation allows the healthcare provider to use it on allergy-sensitive patients. Profore LF is best used on ankle circumferences greater than 18cm (padded).

One patient's experience of Profore LF

The authors work in a leg ulcer clinic in a primary care trust in eastern England. The clinic has been in existence for five years. Treatment is provided to patients using protocols adapted from

Table 1.
Incidence of latex allergy among 224 hospital workers (Yassin et al, 1994)

Group	% positive for latex
All subjects	17
Nurses	18
Laboratory technicians	21
Dental personnel	38
Respiratory therapists	17
Physicians	9
Housekeeping and clerical	0

Table 2.
Indications and components of Profore latex-free multi-layer compression system

Indications	
Profore latex-free multi-layer compression system is suitable for:	Diagnosed venous leg ulcers with a Doppler index reading of greater than 0.8 Pre-tibial lacerations
Profore Lite is suitable for:	Mixed aetiology leg ulcers with a Doppler index reading of between 0.6 and 0.8 Patients who cannot tolerate full compression
Components	
Profore wound contact layer (WCL)	Low adherent wound contact layer for patient comfort Open weave to allow exudate to pass through from ulcer to limit risk of maceration Largest WCL available on prescription for use under multi-layer systems
Profore layer 1	Soft and absorbent padding layer 100% natural fleece, designed to limit risk of sensitivity
Profore layer 2	Provides absorption and conformability to limit risk of pressure damage to limb and aids seven-day wear time
Profore layer 3	Class 3a bandage Central yellow line to aid figure of eight application
Profore layer 4	Class 3b bandage Greater cohesiveness optimises wear time and pressure for a full seven days Neutral colour to aid patient concordance
Profore Plus	Used within Profore system to achieve correct pressure for larger limbs More powerful class 3c bandage Central green line to aid 50% overlap application technique

Figure 1. The components of the Profore latex free multilayer compression system.

the RCN guidelines (1998). Staff at the clinic have all undergone competency-based training in the assessment and management of leg ulceration, and the application of both multi-layer and short-stretch bandaging. In this evaluation Profore LF was used for a period of six weeks on a single patient. After this, interviews were carried out to establish the patient's and the healthcare professionals' thoughts about the new product. The patient's wound was monitored to detect any deterioration in healing.

The patient was an 86-year-old man with a long-standing history of venous ulceration. His wound had previously healed and he was attending the well leg clinic before his current period of re-ulceration. The ABPI was 1.12 in his right leg and he had an ulcer measuring 7cm long by 2.5cm wide on his right medial malleolus. A hydrocolloid dressing was applied to the wound, and multi-layer compression using the Profore LF system was applied. He attended clinic every week and was making slow but steady progress. His ulcer had reduced by 4cm in length and 3cm in width over a four-month period, and measured 3cmx2.5cm at the start of the study. Verbal consent was obtained from the patient before starting the evaluation along with an explanation of the latex-free system and the reasons for wishing to assess the product. As an active member of the clinic's patient-user group, the subject was keen to assist in evaluating a product that may be of benefit to other patients.

During the period of the evaluation, there was no deterioration in the size of the patient's ulcer and a decrease of 0.5cm in width was noted with no change in length. Bandages and dressing were changed once a week as per his previous regimen throughout the evaluation, meaning treatment was consistent. The system was applied by six different nurses during the study period and their thoughts on its use were gathered by means of a semi-structured interview given on the same day as application. The patient was asked each week during his dressing change how he had found the system, also using a semi-structured interview.

The following observations were noted during the period of the evaluation by the nurses in the study:

- All six practitioners felt Profore LF was easier to apply than latex Profore
- All nurses felt that layers 3 and 4 of the latex-free system were particularly easier to handle while applying than Profore
- Four nurses noted that the green line through the layer 3 bandage could lead to confusion with the Profore Plus bandage which also has a green line running through the centre, but is designed for patients with larger ankle measurements
- Three nurses felt that Profore LF's self-adherence was not as good as regular Profore. However, no bandages became undone during the evaluation despite this concern.
- No differences were noted on removal of the bandages during the evaluation.

The patient observations during the evaluation were that:

- It was easier to put on his sock over the bandage
- Clothing did not stick to the bandage, making life much easier
- The latex-free bandage did not catch on bedclothes overnight
- The Profore LF bandage system was less noticeable because

Key Points

- The prevalence of latex allergy has increased over the past 20 years and is a particular problem for healthcare professionals because of frequent exposure to latex products.
- Latex-free alternatives provide a welcome alternative and help reduce the risk of allergy.
- A latex-free formulation of the Profore multi-layer compression bandage system has now been produced.
- The quality-of-life benefits noted by the patient in this evaluation suggests that Profore LF could help improve concordance for patients undergoing compression therapy in the treatment of leg ulceration.

clothes did not stick to it, which he had encountered with the original Profore system.

The subject told other patients about the success of the latex-free system during his routine clinic visits as he felt that it was an improvement on the previous system.

Discussion

The development of a latex-free compression bandage system is a major improvement in health and safety for both patients suffering from leg ulceration and staff when applying bandages. The system is yet to be proven to be of similar clinical effectiveness as Profore using a clinical trial on a significant number of patients. No significant differences in performance were noted in this small evaluation. However, a review on a single patient can only provide limited information to assist practitioners in the choice of product. The improved quality-of-life noted by the patient in this evaluation suggests that Profore LF could provide major benefits to some patients and may help improve concordance with compression therapy for the treatment of leg ulceration.

Conclusions

The introduction of a latex-free bandage system is a useful addition to the range of products currently available to assist in the management and treatment of patients with leg ulceration. Anti-allergenic properties alongside some improvements in quality of life for patients along with the reduction of some irritating (rather than debilitating) characteristics associated with latex bandages are welcome additions to the range of products available. The reduction of exposure to latex for both patients and nurses will allow managers and organisations to reduce the risk of allergic reaction in accordance with national guidance from the Health and Safety Executive. WUK

References

Bandolier (2006) Latex Allergy. www.jr2ox.ac.uk/bandolier/bandopubs/NHSSlatex.html. Date last accessed: 25.10.2006

Callam MJ, Ruckley CV, Harper DR, Dale JJ (1985) Chronic ulceration of the leg: extent of the problem and provision of care. *Br Med J* **290 (6485):** 1855–6

Cullum N, Nelson EA, Fletcher AW, Sheldon TA (2001) Compression for venous leg ulcers. *Cochrane Database Syst Rev* **(2):** CD000265

Moffat CJ, Simon OA, Franks PJ, et al (1999) Randomised trial comparing two four layer bandage systems in the treatment of venous leg ulceration. *Phlebology* **14(4):** 139–42

Royal College of Nursing (1998) *The Management of Patients with Venous Leg Ulcers. Clinical Practice Guidelines.* RCN, London

York Health Economics Consortium (1998) Evaluation of the relative cost-effectiveness of PROFORE. The University of York, York HSE 2006 accessed at http://www.npsa.nhs.uk/display?contentId=3793 Last accessed 24 October 2006

Yassin MS, Lierl MB, Fischer TJ, O'Brien K, Cross J, Steinmentz C (1994) Latex allergy in hospital employees. *Annals Allergy* **72:** 245–9