

PROTECTIVE FOOTWEAR FOR LEPROSY PATIENTS WITH LOSS OF SOLE SENSATION: LOCALLY MADE CANVAS SHOES, DEEPENED FOR A 10-MM RUBBER INSERT

Sir,

During the past 4 years, in close cooperation with a local shoe company in KwaZulu, South Africa, we have used modified canvas shoes, similar to the 'trainer' shoes produced by BATA and many other companies, for patients with loss or diminution of sole sensation.

The essential modification centres on the production of a deepened internal space to accommodate a 10-mm rubber insert (Figure 1). We are greatly indebted to the managing director of our local shoe company for the following information:

'The method by which we deepen the metal moulds is relatively simple. An insole pattern that fits the bottom of the mould (last) is used to produce a "10-mm rubber insert". This is cut from a calendared sheet of 10-mm thickness and is stuck on by means of a "hot melt" adhesive to the bottom of the mould (last). The insole on to which the upper is lasted (generally 2.5-mm insole board) is now placed on this rubber insert and the canvas upper is lasted over the mould by means of a lasting machine. Subsequently all standard procedures pertaining to the production of built-up canvas footwear are followed. After the shoes are vulcanized or "cured" they are removed or "off-lasted" from the mould (last) and thereafter a 10-mm EVA (ethyl vinyl acetate) insert of appropriate size is added. (Note: When the shoes are "off-lasted" the rubber insert still adheres to the bottom of the mould.) Two further points must be noted: 1, all upper patterns have to be modified according to the new mould (i.e. with the 10-mm rubber insert) stuck on the bottom of the mould; and 2, the 10-mm rubber insert has to be vulcanized before being stuck to the bottom of the last.'

These shoes have been produced in different colours and in all the usual sizes for both male and female leprosy patients with diminution or loss of sensation in the feet, some of whom have one or more ulcers. Essentially, however, the shoes are suitable for patients with anatomically normal feet. They are unsuitable for patients with a significant deformity of the foot and/or ankle and for these we continue to try to provide specially made orthopaedic shoes or boots. The straps are of Velcro and easily handled by patients with deformed hands or loss of fingers. The canvas seems to allow good ventilation and we have not encountered any problems with 'sogginess' and fungal or other infections, such as are common in leprosy patients using tight-fitting plastic shoes that are bought from shops. The cost per pair in South Africa is in the region of R8 (currently 2,30 SA Rand = US \$1). On average a pair of these shoes will last 6 months (sometimes a year) and they stand up well to use by patients walking on uneven ground or engaged in agriculture.

Currently we supply 827 pairs of shoes to 549 patients in four of our field areas. This means that some patients require a new pair twice a year while others will use a pair for a year. A major task is to educate rural people to wear protective footwear at all times. The tendency is to 'look after them' by not wearing them except for 'best' or special occasions. We recently discovered a patient who walked to the clinic carrying his sandshoes and then sat at the entrance to the clinic to put them on!



Figure 1. Canvas shoe, deepened to take the 10-mm rubber insert shown below. The two fastening straps are of Velcro and the insert is made of ethyl vinyl acetate. The ruler is 30 cm in length.

Current research into the effectiveness of this programme in Swaziland indicates the following: 90 patients received sandshoes; and 36 arrived with open ulcers. After 6 months' use of the special shoes: 15 were completely healed; 13 much improved; 5 were the same; 3 were worse; and 6 developed new ulcers. After 12 months: a further 25 were completely healed; 6 much improved; 1 was worse; and 3 developed new ulcers.

The deterioration appeared in those cases who did not wear the shoes. We do not subscribe to the view that it should be possible to develop some kind of internationally acceptable form of footwear for leprosy patients and the shoe described here may not be acceptable in some other countries. However they are successful in Southern Africa and have been used in Swaziland, Lesotho and Malaŵi. Their production is not technically demanding and their cost, although by no means insignificant, is very small in comparison with the costs in terms of disability and human suffering which result if protective footwear is not provided for all leprosy patients with loss or diminution of sole sensation.

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