

DEVELOPMENT OF A STATIC AIR MATTRESS WITH A **HEEL FLOTATION ZONE**

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Introduction

Heel ulcers are becoming increasingly prevalent with many surveys indicating that they are becoming the most common area for pressure ulcer development. Current guidelines (NICE 2014 and NPUAP et al 2014) recommend that to prevent heel ulceration patients who are identified as being at risk should have their heels floated however this is not always straightforward (see Figure 1). Several companies include specific heel protection zones in their powered mattress systems but these are less common in standard foam replacement mattresses.

Method

Working in collaboration with a commercial organisation (Direct Healthcare Services) an existing static air mattress was modified to both increase the length when profiled and to improve the pressure reduction at the heel (see Figure 2). The static air system allows appropriate flotation of the heel without additional equipment being used. The flotation of the heel was tested by the ability to remove a sheet of paper from beneath the heel without using force or causing friction. Before fully evaluating the heel protection zone in a clinical area a measure of equivalence with the existing hospital mattress was carried out in a 30 bedded ward. Appropriate governance procedures were followed prior to commencing the evaluation.

Issues associated with heel protection

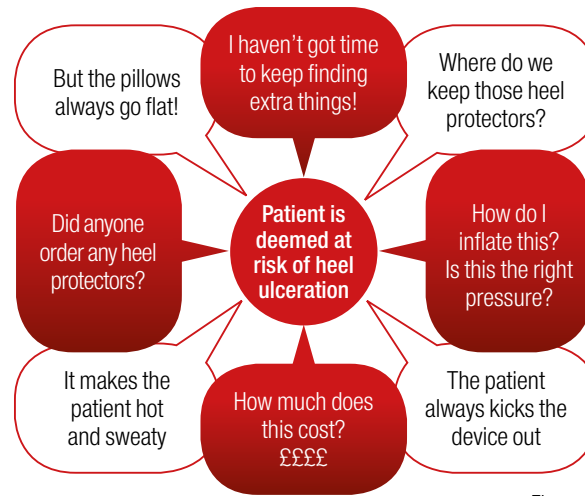


Figure 1.

The new mattress

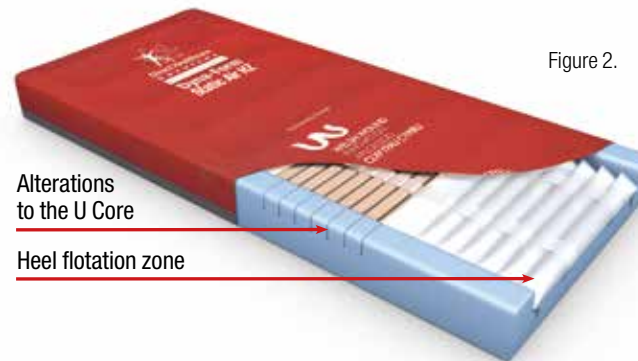


Figure 2.

The clinical evaluation

26 sets of data were collected*, 10 men and 15 women completed the evaluation with ages ranging from 55 to 90 (mean 73.4) (from 23 patients). All patients were deemed to be At Risk based on their Waterlow Score with scores ranging from 7[^] – 23.

The mean risk score was 13.8 (from 26 pts) when the incorrect score was removed the mean risk score was 14.12 (for 25 patients).

5 patients were recorded as having pressure damage on admission of these 2 had resolved during the admission, 1 patient died and 2 remained static.

Staff were asked to score the following using a 1 – 5 scale where:
1 = Poor / No 2 = below average
3 = average 4 = good and
5 = excellent / Yes (see Figure 3)

Staff responses

Question	Mean score
Did the mattress meet your objectives?	3.8
How comfortable?	3.9
How easy was it?	4.2
In your opinion how effective was the mattress at pressure ulcer prevention?	4.1

Figure 3.

* Some forms were not fully complete therefore some results presented are on less than 26 patients.

^ The patient who scored 7 had their score incorrectly recorded, (male age 86, grade 2 PU & died within days, it was not possible to recalculate the actual score but based on the limited information on the form his score must have been at least 15.