

SHORT RESEARCH REPORT

A clinical evaluation of the Transfoam mattress after 4 years

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It has long been recognized that the standard NHS mattress is subject to a large amount of wear and tear (Simpson and Livesley, 1989). While high-tech mattresses are of great benefit to patients at risk of pressure sore development, resources within the health service are finite; consequently, patients at risk of sore development are often cared for on foam mattresses. During the past decade many healthcare providers have chosen to replace the standard mattress with pressure-reducing foam mattresses (PRFMs).

PRFMs are designed to provide a higher level of pressure reduction to vulnerable patients by ensuring greater contact between the skin and the mattress; this is achieved by partially submersing the patient in the foam (Jay, 1995). This improved level of performance is achieved by using foams of a higher density than in the standard NHS mattress; these foams provide greater conformability and have a greater life expectancy (King, 1991; Rithalia, 1996).

The type of cover used on PRFMs also differs from that used on the standard mattress. The new covers are vapour permeable, waterproof and multi-stretch. This is an improvement on the standard, tight-fitting, non-stretch material (Thomas, 1998). The standard covers could, in some circumstances, increase the pressure at the mattress skin interface (Rithalia, 1996).

The trend towards PRFMs was hastened by the publication of both laboratory and clinical data. Swain (1993) published laboratory data which identified that the standard mattress provided considerably higher interface pressures than the new generation PRFMs. These findings were supported by the publication of a randomized controlled trial the year after; this study showed that patients cared for on a standard mattress had four times the pressure ulcer incidence rate than those cared for on a PRFM (Gray and Campbell, 1994).

In a wide-ranging literature review, Cullum et al (1995) concluded:

Abstract

It is recognized that pressure-reducing foam mattresses can be of benefit in the prevention of pressure sores but it is also recognized that more information is required to demonstrate their long-term efficacy (Cullum et al, 1995). It is therefore necessary to evaluate the pressure-reducing capabilities of this type of mattress some years after purchase to evaluate if in fact it can maintain its initial level of performance. This article presents the results of one such study carried out 4 years after the purchase of Transfoam mattresses.

'The standard hospital mattress is less effective than some of the low-pressure foam mattresses.'

This opinion was qualified by the following statement:

'These alternatives to the cheaper standard mattress may be cost-effective if their durability is adequate.'

While it was thought that these low pressure foam mattresses were clinically effective, little was known about how long these mattresses would continue to be effective. To date, only one study has been conducted to investigate the performance of PRFMs after some years in clinical use (Gray et al, 1998).

The current study seeks to further address this issue by reviewing the performance of the Transfoam mattress after 4 years of clinical use in a care of the elderly setting.

METHOD

This study was conducted within the care of the elderly unit, Battle Hospital, Reading, over a 6-month period. Data were collected by a single researcher throughout the trial. All admissions to an acute care of the elderly admissions ward were screened and those who met the entry criteria were considered for inclusion in the trial.

To be considered for entry to the study the subjects were required to have intact skin, be 65 years of age or over, have a Waterlow

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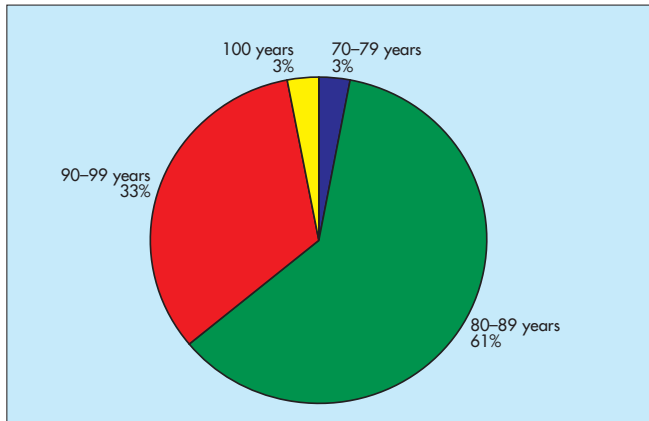


Figure 1. Age range of subjects.

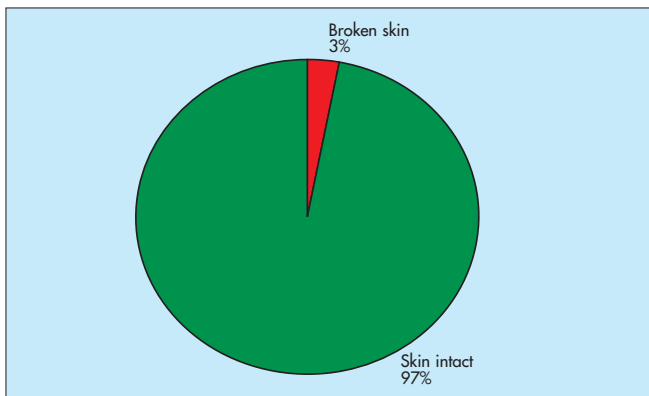


Figure 2. Pressure sore development (broken skin).

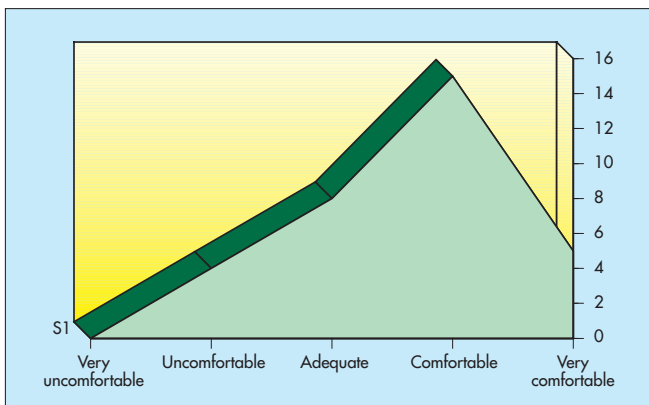


Figure 3. Transfoam comfort scores.

(1985) score of 15 and over, and be expected to remain an inpatient for at least 7 days. Patients considered terminally ill were not considered for inclusion. If a trial mattress was available the subject was admitted to the trial and initial data were collected.

Following the collection of initial data the patient was cared for according to the ward pressure sore prevention policy and provided with a seat cushion while out of bed. After 7 days the subject was reviewed and a detailed assessment of his/her skin condition carried out. Also at this time the subjects were asked a standard question, 'Which phrase best describes the mattress you have occupied during your stay in hospital?'. The subjects were then shown a laminated sheet of paper which contained the following phrases:

- Very uncomfortable
- Uncomfortable
- Adequate
- Comfortable
- Very comfortable.

A physical inspection of the mattresses and covers was also undertaken at this time. After 7 days the subjects were discharged from the trial. Local ethics committee approval for this study was sought and obtained.

EQUIPMENT

Twenty Transfoam mattresses which had been in use for 4 years at the beginning of the trial were identified and checked to ensure they were still in a suitable condition for inclusion in the trial. The Transfoam mattress is a pressure-reducing foam mattress which utilizes different densities of foam to provide pressure reduction. The foam is covered with a two-way stretch Dartex cover.

RESULTS

An elderly population of 33 were recruited (Figure 1) with a mean age of 78 years (range 79-100). All subjects were awarded a Waterlow score on admission and the mean score was 17.6 (range 15-23). From the inspections of skin made during the subjects' stay in hospital the following observations were made using the Torrance (1983) grading system.

Six subjects were found to have blanching hyperaemia, grade one Torrance scale. Two subjects developed broken skin which were graded as Torrance grade two sores (Figure

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2). Thirty two (97%) of the subjects were able to respond to the comfort question, 28 (87%) described the mattress as adequate to very comfortable (Figure 3) with four (12%) describing it as uncomfortable. All but one of the subjects spent time out of bed during the day with the majority — 25 (76%) — spending up to 6 hours out of bed each day. All of those sitting up out of bed were provided with a seat cushion.

DISCUSSION

The low numbers recruited to this study do limit the interpretation of the findings. It should also be recognized that the care and maintenance of PRFMs greatly affects their ability to perform after years of clinical use. It is clear from Figure 1 that the population recruited was elderly with a mean age of 78 years and that their Waterlow scores indicated they were indeed at risk of pressure sore development. It is also clear that with the majority of subjects spending around 6 hours per day out of bed that the risk of pressure sore development was increased (Gray, 1992; Gebhardt and Bliss, 1994).

From the skin assessment a small number of pressure areas were observed with the majority being reactive hyperaemia and two being broken skin. All of the subjects were treated in accordance with the ward pressure sore prevention policy which, in combination with the mattress and seat cushion provision, ensured that the incidence of pressure sores was low within this high risk group.

It should be recognized that pressure-reducing mattresses of whatever type are only part of the provision which leads to pressure sore prevention. Four subjects described their mattress as uncomfortable while the remain-

der of respondents expressed satisfaction with the mattress. During the trial no deterioration in the foam or covers of the mattresses was observed.

CONCLUSION

The results obtained suggest that the Transfoam mattresses studied were functioning well after 4 years of constant clinical use. Although a high risk group of subjects were recruited, the mattresses, along with the seat cushions and nursing care, have combined to keep the incidence of pressure sore development relatively low. Our results show that the mattresses studied function well as part of a holistic pressure sore prevention plan.

Cullum et al (1995) felt that mattresses such as the Transfoam would be cost-effective if their durability could be described as adequate; the results obtained appear to demonstrate the durability of the mattresses studied. It should of course be recognized that if PRFMs are to be effective they must be audited regularly, well maintained and used as part of a holistic pressure sore prevention plan. **BN**

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KEY POINTS

- Information regarding the long-term efficacy of pressure-reducing foam mattresses is required.
- A high-risk elderly population was recruited into a clinical trial.
- The mattresses provided satisfactory levels of pressure reduction as judged by the incidence of pressure sore development.
- Patients found the mattresses provided a high level of comfort.