Evaluation of a range of hospital replacement mattresses

Mattress evaluation

Physiological Measurement

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INTRODUCTION

A common strategy in avoidance of pressure sores is the use of pressure redistributing mattresses. These are believed to prevent both initial development of pressure sores and the deterioration of established sores. This corresponds with the need for a standard, high quality foam mattress for use throughout community and hospital Trusts.

The *Altnagelvin Area HSS Trust* is the largest acute hospital in the *Western Board* area with 500 beds. The Trust was scheduled for large-scale mattress replacement in early 1998.

METHOD

A product evaluation process was instigated to examine quality of product, after-sales service, life expectancy, warranty, customer feedback and price.

Indentor tests

Mattresses were loaded using a specially manufactured wooden indentor of diameter 20cm, fitted with a short stump and pipe, constrained to move vertically in a guide-channel. The pipe and hemisphere carried three 10kg weightlifters' weights. Pressure sensors were taped to the apex of the hemisphere prior to loading.

Interface pressures were recorded immediately after loading, 24 hours later and after 24 hours recovery. Attention was paid to peak pressures and % change relative to initial readings.

Clinical evaluation

After indentor testing, selected mattresses were placed in the clinical setting for a two-week period to gather users' opinions about practical use and perceived comfort for a variety of clinical subjects.

RESULTS

The 13 tests demonstrated variable pressure relieving properties. A process of exclusion was adopted in order to find a subset suitable for clinical evaluation.

INDENTOR TESTING

Clinisert

Both sides of this mattress were tested separately. The peak pressures recorded for each side were high. It was considered impractical to use a double-sides mattress in a busy clinical situations. **Verdict**: Reject.

Vaperm

This mattress provided low peak pressure readings, pressure reduction qualities but had a high recovery reading (131). **Verdict**: - Withdrawn at the request of the supplier.

N.H.S. Standard Mattress

used as the baseline upon which peak pressure readings would be compared.

Serendipity Talley

This mattress had a score of (142 - 153 - 159), an unfavourable increase in peak pressures, no pressure reducing qualities and difficulty in recovering to its original state. **Verdict**: Reject.

Prima STM6

Fair pressure-reducing qualities requiring further investigation. **Verdict**: Shortlisted for Clinical Evaluation

Transfoam

Good pressure reducing qualities. Although a high reading is initially recorded it reduces and recovers favourably. **Verdict**: Shortlisted for Clinical Evaluation.

Pegasus Key 2 Care

This mattress had an initially high reading with a slight reduction but with a most unfavourable reading after the 48 hour period (143 - 137 - 194). **Verdict**: Reject.

Thermo Contour

This mattress had a high initial peak pressure reading of 180. **Verdict**: Reject.

Omnifoam

With readings of 127 - 133 - 128 it would appear that this mattress has little, if any, pressure reducing qualities. **Verdict**: Reject.

Vapourlux

Little, if any, pressure reducing qualities. **Verdict**: Reject.

Pentaflex

With readings of 109 - 102 - 124 it is clear that with such low figures and with the reduction from 109 - 102 that pressure reducing qualities do exist. **Verdict**: Shortlisted for Clinical Evaluation.

Softform

This mattress had an initially high reading followed by a slight reduction followed by an unfavourably high third reading. The peak pressure readings (143 - 138 - 153) would therefore suggest that although a slight pressure reduction occurred the first and final readings would be too high to be acceptable. **Verdict**: Reject.

CLINICAL EVALUATION

Three mattresses were shortlisted for clinical evaluation in a Medical Ward. Each was received favourably by nursing staff and patients.

The transfoam mattress cover tended to wrinkle and remain in a wrinkled state resulting in some discomfort to patients.

The Pentaflex - produced less of a tendency for patients to slip down the bed. This aspect was regarded favourably by patients and staff, as there would be less need for staff to readjust immobile patients.

CONCLUSION

In terms of patient and staff feedback all three of the shortlisted mattresses were identified as being similar in terms of comfort and ease of handling. With regard to Supplier Warranty, the **Pentaflex** mattress had a 4-year full warranty. This was more attractive than the other two. When life expectancy and ultimately a basic calculation of life cost per year was performed, one mattress emerged as the most cost efficient.

The final decision was made to purchase Pentaflex from Huntleigh Healthcare.