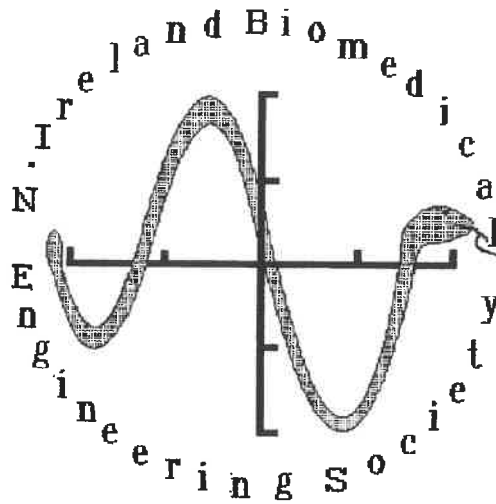


Northern Ireland Biomedical Engineering Society



Autumn Meeting Programme 16 October 1999 Holiday Inn Express Belfast

Sponsored By

INSTITUTE
OF BIOLOGY



KENDALL
Healthcare Products

TFX Medical Ltd

A Branch of TFX Engineering.

Do Mattresses differ?

WG Kernohan, School of Health Science, University of Ulster, Newtownabbey BT37 0QB

Introduction. Pressure sores arise from the combined effects of pressure, friction and shear¹. Whilst their aetiology is complex and remains uncertain, constriction of small blood vessels at or near the surface contribute to tissue injury and necrosis. Commonly, pressure-redistributing mattresses are used to prevent initial development and the deterioration of sores².

Method. Altnagelvin hospital was scheduled for mattress replacement in 1998 and this led to 12 foam mattresses being subjected to testing for 48 hours using an indenter loaded with 30kg³. Interface pressures were recorded before and after 24 hours loading.

Results. Peak readings were taken to indicate level of pressure sore care and used in a process of exclusion of poor performance. The best three mattresses were included in a lifetime costing study using manufacturers' guarantee period to indicate mattress life (table).

Conclusion. Quantitative bioengineering analysis of mattress pressure relieving properties is useful prior to purchase. On the basis of these findings, 500 type 12 mattresses have been purchased.

Table. Peak pressures (arbitrary units) on loaded mattresses, in order of peak pressure-at-onset (three best cases)

Type	onset	Relief	cost	life	price/ yr.
6	106	99	145	2.5	58
12	109	102	144	4	36
7	131	116	135	1.5	90

1. Jay, E. How different constant low pressure support surfaces address pressure and shear forces. *Journal of Tissue Viability* 5: 4, 118-122.

2. Dealey, C. Mattresses and beds. *Journal of Wound Care* 4: 9, 409-412.

3. Medical Devices Directorate, Department of Health, London. *Evaluation* 1993; PS1: 1-24.