

**SALISBURY
HEALTH CARE
NHS TRUST**

Department of Medical Physics
And Biomedical Engineering
Salisbury District Hospital
Salisbury Wiltshire SP2 8BJ
Telephone (01722) 336262
Extension 4065
Fax (01722) 425263

EVALUATION OF STATIC SUPPORT SURFACES

Comparison of Tempur Overlay and the Standard King's Fund Mattress
Tempur1.MEP.97

Interim Report

D. Norman AMILS
I.D. SWAIN, Ph.D C.Eng FIEE FIPEM

Subjects

The evaluation of the mattress were undertaken on ten elderly but ambulant volunteers who are members of the hospital retirement fellowship. They were dressed in standard bed-ware, pyjamas or nightdresses or loose fitting underclothes. The subjects had a mean age of 67.5 years, a mean height of 1.68 m and a mean weight of 63.2 kg.

Measurement Technique and Equipment

All readings were made using a Mark 11 Oxford Pressure Monitor employing techniques developed over the past ten years. Measurements were made on the sacrum, great trochanter and heels, following the protocol developed as part of the Department of Health mattress Evaluation Project. All the sensors used were calibrated at 0,100 mmHg and 200mmHg at the start of each day on which measurements were taken.

The subjects were positioned on the bed in a semi recumbent position on the bed with the back rest of the bed set at 45. Readings were then made under the heels and under the pelvic/sacral area. Readings on the trochanter were made with the subject side lying with hips and knees flexed at 60. The 3*4 sensor array was used for the pelvic/sacral area and the trochanter but individual cells were used for the measurements of heel pressure. Initially measurements were made on a standard hospital foam mattress, 150m thick with a nylon 'marbled' cover. The sensor were not attached to the subject but were moved until the area of highest pressure is measured. When using the 3*4 array the sensor was moved until the highest pressure registers on one

of two of the central sensors. This technique was repeated for each mattress tested. The subject was left for the 10 minutes in each position on the Tempur overlay before the readings are recorded. The volunteers comments were noted. This was then repeated with the overlay being placed on the top of the standard King's Fund mattress.

For all tests the maximum pressure measured at each site were used to undertake statistical analysis of the results obtained.

The overlay has now been placed in clinical use for six months and will be monitored at regular intervals. It will then be retested at the end of the six month period.

Results

The readings were down loaded into an Excel spreadsheet and analysed using Confidence Interval Analysis. This showed that there was a statistically signification reduction in interface pressure under all three areas measured; the sacrum (21%), heels (41%) and trochanter (17%). The complete results are shown in the attached table. The results are also shown graphically in Chart 1-3.

Ian Swain
14 April 1997

STATISCAL ANALYSIS	SACRUM	HEEL'S	TROCHANTER
MEAN, STD MATTRESS	80.20	169.60	101.30
STD DEV	11.96	26.36	28.12
95% CONFIDENCE INTERVAL	7.41	11.55	17.43
MEAN INTERFACE PRESSURE OF:NAME OF TEST MATTRESS	63.20	100.70	84.40
STD DEV	10.49	18.77	30.21
95% CONFIDENCE INTERVAL	6.50	8.23	18.73

MEAN DIFFERENCE; STD of TEST	SACRUM	HEEL'S	TROCHANTER
MEAN DIFFERENCE BETWEEN STD & NAME OF TEST MATTRESS	17.00	68.90	16.90
STD DEV OF DIFFERENCES	17.56	24.24	20.15
STD ERROR OF MEAN DIFFERENCE	5.55	5.42	6.37
% PRESSURE REDUCTION FROM STD	21.20	40.63	16.68
MEAN DIFFERENCE CONF. INT.			
from	4.44	57.56	2.49
To	29.56	80.54	31.31