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24-HOUR PAD TEST: A COMPARISON OF NORMAL RANGES BETWEEN TWO COUNTRIES AND ACCORDING TO THE TYPE OF PAD USED.

Hypothesis / aims of study

The 24-hour pad test is a useful objective outcome measure for leakage severity but has not been standardised. Factors affecting normal pad test weight may include the absorption characteristics of the pad used or the geographic location of the community undertaking the test, but there have been no comparative studies using different populations. Such information is important if the 24-hour pad test is to be used in international multicentre studies. Thus the aim of this study was to determine whether the normal ranges for the 24-hour pad test vary with pad type and geography, and to give further normative data on the 24-hour pad test as recent studies suggest ranges that are lower than previously found (1).

Study design, materials and methods

This study was composed of two parts:

1) To assess the influence of geography on pad test results a cohort of continent women undertook the 24-hour pad test in teaching hospitals in London, UK and Sydney, Australia. The pads used in London were Tena Comfort mini extra pads (hereby called 'Tena Comfort' pads. These were shipped to Sydney to keep the pads identical. The test was conducted in winter months in both countries. An almost identical scale accurate to 0.1g was used to weigh pads in both countries.
2) To assess the influence of pad-type on normal ranges another cohort of continent women in Sydney undertook the 24-hour pad test wearing Tena Normal pads for comparison with the Sydney cohort who used Tena Comfort pads.

Ethics approval was granted in both Sydney and London teaching hospitals. Groups such as nursing and anciliary staff were approached in groups and pads were distributed and collected anonymously together with responses to an anonymous questionnaire.

Results

PART ONE: Eighteen women in London, and 21 in Sydney performed the 24-hour pad test using the Tena Comfort pads. The baseline characteristics of the London and Sydney groups are shown in Table 1.

Table 1. Comparison of 24-hour pad test results in continent volunteers in London and Sydney.

	London Comfort Mini Extra n=19	**Sydney Tena Comfort Mini Extra n=21**	**Unpaired t test (P)**
Age (yrs)	52 (SD 17) Range 21-86	46 (SD 13) Range 25-67	0.36
Body Mass Index	23.6 (SD 5)	27 (SD 4.8)	0.06
Parity	1.1 (SD 1.3)	1.1 (SD 1.3)	0.82
Menopausal women	N=11	N=10	chi squared test P=0.52

The pad test weights of both groups were normally distributed and showed no significant difference (Table 2). The London group used a median of 3 pads (IQR 2-3) of the 5 pads given during the duration of the 24-hour pad test, while the Sydney group used a median of 2 (IQR 1-3).

Table 2. Pad test values for continent women in London compared to Sydney (Tena Comfort pads)

	London Cohort N=19	**Sydney Cohort N=21**	**Mann-Whitney Test (P)**
Mean (grams)	4.8	3.6	0.25
Standard Deviation (g)	3.1	1.8	
Upper 95% confidence limits	6.4	4.4	

PART TWO: Eighteen continent volunteers performed the 24-hour pad test with the Tena Normal pad to compare with the results of the 21 volunteers who wore Tena Comfort mini extra pads. The age and menopause characteristics of the two groups are shown in Table 3. None of the menopausal women were using Hormone Replacement Treatment.

Table 3. Demographic characteristics of continent volunteers in Sydney

	Tena Normal N=18	**Tena Comfort N=21**	**Unpaired t-test (P)**
Mean Age (yrs)	43 (SD 16) Range 18-88	46 (SD 13) Range 25-67	0.5
Body Mass Index	26.1 (SD 5.4)	27 (SD 4.8)	0.46
Parity	1.1 (SD 1.2)	1.1 (SD 1.1)	0.8
Menopausal women	5/18 (27.8%)	10/21 (48.9%)	0.2 (chi squared test)

The Sydney pad test data were not normally distributed. The pad test results of the Tena Normal pads were significantly lower than Tena Comfort pads (Table 4). The Mann-Whitney test was employed to compare data because the data were non-parametric.

Table 4. Comparison of Normal Ranges between Tena Normal and Tena Comfort mini Extra

	Tena Normal N=18	**Tena Comfort N=21**	**Mann-Whitney Test (P)**
Mean (grams)	1.4	3.6	<0.0001
Standard Deviation (g)	1.0	1.8	
Upper 95% Confidence Limits	1.9	4.4	

Interpretation of results

Part one of this study demonstrates no significant difference between normative data from two countries in different hemispheres. Part two of this study shows significant differences in normal ranges when different pads are used. The upper limit of normal of the Tena Normal pad is 1.9g.

Concluding message

This is the first study to compare pad testing internationally, showing that pad test normal ranges may apply universally. However this study also highlights the importance of standardising one pad for the 24-hour pad test as pads of differing characteristics produce variable results. The Tena Normal pad has been found previously to more accurately represent the actual moisture deposited (2) and thus may be the preferred pad. The upper limit of normal of this pad is 1.9g.

References

1. BJOG. 2003 Jun;110(6):567-71
2. Neurourol Urodyn. 2004; 23 (5/6):570-571.

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