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<b>AGE AND THE MEASUREMENT OF OUTCOME OF TREATMENT OF THE OVERACTIVE BLADDER</b>

**AIMS OF STUDY** Recent large clinical trials of the new antimuscarinic agent tolterodine demonstrated response differences between young and older adult patients (1,2). Specifically, amongst younger adults treated for four weeks, episodes of incontinence proved unresponsive despite significant changes in urinary frequency (2). In older people both episodes of incontinence and frequency responded significantly to active treatment (3). With twelve weeks of therapy both outcome variables changed significantly for the better in all groups treated actively (3). Data from pilot studies, using oxybutynin, had indicated that this age-related discrepancy should be expected. This study was designed to scrutinise this issue definitively using larger samples.

**METHODS** This was a prospective, observational study. 583 women aged  $\geq 20$  with frequency, urgency, and/or urge incontinence were treated with oxybutynin and bladder retraining and reviewed after 6 to 8 weeks. Their average, reported, daily frequencies and incontinence episodes were recorded at the start and end of the treatment period, when they were also dichotomised into those who believed they had, or had not, responded to treatment. The sample was also divided into those aged  $< 75$  and those aged  $\geq 75$ . The changes in frequency and incontinence episodes over the treatment period were calculated and the results used to compare the two age groups. Comparisons between groups were achieved through the Mann-Whitney Test. The data were used to generate power tables using 24-hour frequencies and incontinence episodes as outcome measures in the two different age groups.

**RESULTS** 485 women were aged  $< 75$  (Mean=51.8, sd=13) and 98 were aged  $\geq 75$  (Mean=81, sd=4.5). The changes in frequency were similar between age groups but the change in incontinence episodes was significantly greater amongst the elderly ( $U=23 \times 10^3$ ,  $p=0.02$ ). Both variables discriminated successfully between responders and non responders in both age groups ( $U=26 \times 10^3$ ,  $p<0.001$ ). Since the data were approximately normally distributed power tables were calculated using sample means and standard deviations (Sample Power – SPSS) for a 2-tailed test with significance (alpha) set at 0.05. The results are shown in the table.

**Samples sizes (in each group) necessary to achieve 80% power for a two tailed test with significance set at 0.05 in studies designed to discriminate response.**

Age group	Using change in frequency	Using change in incontinence
Young (aged $< 75$ )	50	140
Old (aged $\geq 75$ )	60	80

These data clearly demonstrate the greater sensitivity of change in 24-hour incontinence episodes in older women.

**CONCLUSION** These data confirm the observations made during the tolterodine studies and earlier pilot studies. There is a significant difference in response sensitivity to antimuscarinic agents, between elderly and younger adult women, when incontinence episodes are used as outcome measures. The power calculations assessed the ability to discriminate responders from non responders in an observational study. If a blinded, comparative study was being considered the samples sizes would have to be larger. The insensitivity of incontinence episodes does not indicate that the drug is being ineffective, the phenomenon simply reflects a very important statistical effect. Younger patients with overactive bladders may guard against incontinence by increasing frequency. The elderly, being less mobile, may be unable to adapt in this manner. This means that the two groups will offer different potential changes in measured incontinence episodes when being treated under observation. Unless large samples are used, incontinence proves to be a less reliable outcome measure in younger adults. It would seem that frequency is more consistent across the age groups.

#### REFERENCES

- (1) Tolterodine, a new antimuscarinic agent: as effective but better tolerated than oxybutynin in patients with an overactive bladder. *Br. J. Urol.* 1998;81:801-10.
- (2) Clinical efficacy and safety of tolterodine in the treatment of overactive bladder: a pooled analysis. *Urol.* 1997;50(6A Suppl):90-6.
- (3) Safety and clinical efficacy of two dosages of tolterodine in comparison with placebo in the treatment of urinary urgency, frequency and urge incontinence in the elderly. *Proc. Int. Cont. Soc.* 1997;1,155-156.