

## HOME UROFLOWMETRY FOR ASSESSMENT OF MEN WITH LUTS.

### Hypothesis / aims of study

Our aim was to compare home use of a low-cost electronic flowmeter and automated voiding diary with conventional clinic uroflowmetry and manual frequency volume chart (FVC). Men being assessed for lower urinary tract symptoms (LUTS) were assessed according to four outcomes:

1. Success rates of test completion.
2. Measurement of maximum flow rate ( $Q_{\max}$ ).
3. Test-retest repeatability.
4. Patient preference.

### Study design, materials and methods

60 men were recruited and 59 completed the study. Each man recorded home voids for one week with the home flowmeter, manually completed a 4-day FVC and attended a clinic urine flow test. 28 men attended a second clinic flow test to allow assessment of test-retest reliability. Lastly, they completed a questionnaire concerning their preference for either test. A median  $Q_{\max}$  was calculated for each participant from multiple home readings.

### Results

1. Success rates of test completion:

Home-based uroflowmetry and automated voiding diary: 59/59 (100 %).

Clinic-based uroflowmetry and manual FVC: 53/59 (90 %).

- 2 failed to void.

- 4 failed to complete a FVC.

$p = 0.03$  (McNemar test)

9 men voided in the clinic with voided volume ( $V_{\text{void}}$ ) <150 ml, and one man voided at home with all  $V_{\text{void}}$  <150 ml.

2. Measurement of  $Q_{\max}$ .

Paired clinic and home measurements were available for 57 men. Home recordings gave a median of 49 voids per man (interquartile range 32 to 71). Median home  $Q_{\max}$  was higher than single clinic  $Q_{\max}$  ( $13.5 \text{ ml}\cdot\text{s}^{-1}$  versus  $11.9 \text{ ml}\cdot\text{s}^{-1}$ ,  $p = 0.011$ , paired t-test).

3. Test-retest repeatability.

The mean absolute difference between the two clinic-based measurements of  $Q_{\max}$  was  $2.6 \text{ ml}\cdot\text{s}^{-1}$ .

For home measurements, each participant's voids were separated into the first and second halves, median  $Q_{\max}$  calculated for each half, and the absolute difference calculated between the two medians. These differed by an average of  $1.1 \text{ ml}\cdot\text{s}^{-1}$ .

Bland-Altman plots demonstrating test-retest repeatability of home and clinic-based measurements are shown in Figure 1.

4. Patient preference.

55 men completed the questionnaire. Of the 46 men who expressed a preference, 40 chose home uroflowmetry and 6 chose clinic uroflowmetry.

### Interpretation of results

There is a desire to reduce hospital activity and move care closer to the patient's home. Uroflowmetry is a simple and self-administrable test and may therefore be suited to take place in the patient's home. Before such a step can take place, home uroflowmetry must be shown to be feasible in terms of reliability, patient acceptability and success rates of obtaining usable measurements. This study has shown home uroflowmetry to be feasible, and in fact superior to conventional uroflowmetry, in these areas.

### Concluding message

Home-based assessment for men with LUTS using a low-cost electronic flowmeter was better tolerated, less likely to fail and gave more reliable measurement of  $Q_{\max}$  than a standard combination of clinic-based uroflowmetry and manual FVC. Further studies are required to determine benefit for treatment outcome and cost-effectiveness.

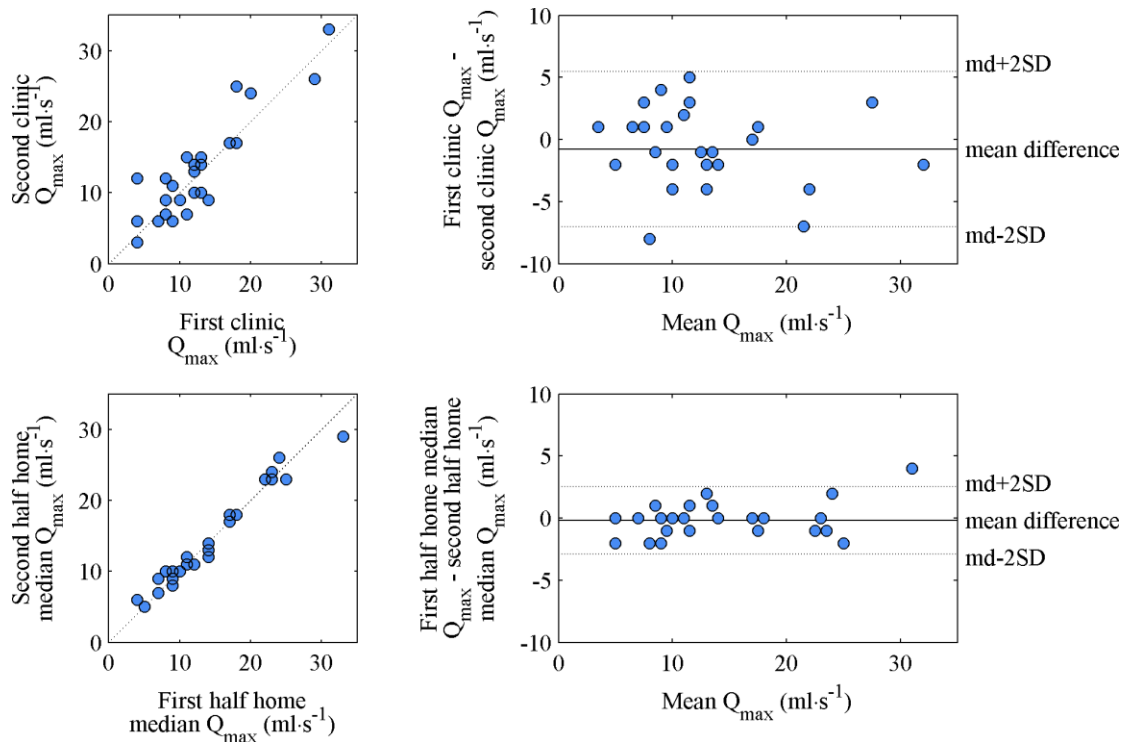


Figure 1. Bland-Altman plots demonstrating test-retest repeatability of clinic (top) and home-based (bottom) measurements.

#### Disclosures

**Funding:** The Wellcome Trust **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** Newcastle & North Tyneside 1 **Helsinki:** Yes **Informed Consent:** Yes