



#175 A NOVEL MOBILE UROFLOWMETRY APPLICATION FOR ASSESSING LOW URINARY TRACT SYMPTOMS

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PURPOSE

Uroflowmetry is an invaluable part of the evaluation of male voiding dysfunction. However, a single uroflow may give suboptimal information to the urologist, especially if the voided volume is low due to an underfilled bladder. On the other hand, multiple uroflows at varying times of day and night can give more useful information and can be more helpful for determining pathophysiology.

We developed and validated a *MenHealth*® mobile touchless uroflowmetry application that processes the sound of urine hitting the water surface in the toilet and calculates urinary flow rate and voided volume in real time. This technology can be useful for an ambulatory and unlimited “home” uroflowmetry system.

METHODS

A validation trial using a standard flowmeter (Laborie UROCAP II) as a reference was conducted. Two males, age 36 and 58, provided a total of 50 voids: 22 tests using UROCAP II and 28 tests using the *MenHealth*® application. The average maximum flow rate (Qmax) and average voided volume (VV) were compared.

In a separate validation trial, 31 independent testers evaluated the *MenHealth*® application on their mobile device.

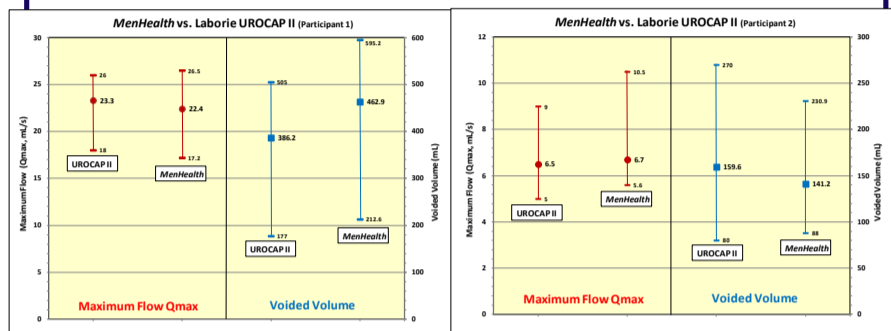


RESULTS

Comparing average Qmax and average VV and their ranges showed no significant difference between the *MenHealth*® audio uroflowmetry and the Laborie UROCAP II (P-value > 0.05).

Participant 1 (Male, 36)					
	Number of Tests	AVRG Maximum Flow (mL/s)	Maximum Flow Range (mL/s)	AVRG Voided Volume (mL)	Voided Volume Range (mL)
UROCAP II	10	23.3	18 - 26	386.2	177 - 505
MenHealth	13	22.4	17.2 - 26.5	462.9	212.6 - 595.2
P-value		0.428		0.078	

Participant 2 (Male, 58)					
	Number of Tests	AVRG Maximum Flow (mL/s)	Maximum Flow Range (mL/s)	AVRG Voided Volume (mL)	Voided Volume Range (mL)
UROCAP II	12	6.5	5 - 9	159.6	80 - 270
MenHealth	15	6.7	5.6 - 10.5	141.2	88 - 230.9
P-value		0.664		0.371	



In the separate validation trial, 91% rated the app as “easy” or “very easy” to use. 56% reported that they would test their uroflow every week or several times per week, and 77% reported that they would conduct self-testing once per month or more.

84% of testers responded that they would purchase the app if a physician recommended it, and all testers responded that would “definitely” use the app if cost were covered by their medical insurance.

CONCLUSIONS

This audio uroflowmetry application can convert any toilet into a mobile uroflowmeter. Men found the device generally easy or very easy to use. There is no need for office staff or user to empty a dirty collection device, nor is there a need for the user to aim into a funnel. The flow curves and voided volumes obtained by the application are similar to those from a standard uroflowmeter, confirming the accuracy of the measurements.

In addition, the app may be used at home to obtain multiple uroflowmetry events allowing for more accurate diagnosis than can be obtained from a single office-based test. The app stores each event which can be reviewed in diary or graphic form.

Advantages of *MenHealth*® Uroflowmeter

Hands-free / Non-contact / Hygienic / Free from need for cleaning

User friendly (voice command “start” and “stop”)

Home use for multiple voids and varying volumes under normal conditions of variable fluid status

Potential for true accurate “electronic voiding diary” that captures urinary events and voided volume in real time, ensuring accuracy of diary without the need for patient-initiated data entry

Can measure response to intervention / therapy over time

Acknowledgements: Funding BE Technologies, San Francisco, CA