A NOVEL MOBILE UROFLOWMETRY APPLICATION FOR ASSESSING LOW URINARY TRACT SYMPTOMS

Craig V. Comiter, M.D. and Edward Belotserkovsky, Ph. D.
Stanford University, Stanford, CA and BE Technologies, San Francisco, CA

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.

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).

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.

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.

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.

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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

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