

## HOW UROFLOWMETRY IS PERFORMED: RESULTS OF AN INTERNATIONAL SURVEY AMONG ICS MEMBERS

### Aims of Study

To assess the modalities of performing and interpreting uroflowmetry (UF) by International Continence Society (ICS) members worldwide.

### Methods

A questionnaire on UF was delivered by email to the members of ICS involved in UF in their practice. This 11-item questionnaire concerned: the professionals actually performing the test, the number of UFs for each subject in a single session, the lower and upper limits for considering suitable the voided volume (VV), the use of UF nomograms and the parameters considered for the interpretation of UF. Other questions regarded the means of measuring post-void residual (PVR) and the Qmax cut-off for an abnormal UF.

### Results

One hundred and sixty-six centers from 35 countries in 4 continents completed the questionnaire and returned it to the Authors. Most of the respondents were urologists (81/166, 48.8%) and urogynaecologists (53/166, 31.9%). UF is performed by nurses in 85/166 centers (51.2%), by physicians in 49/166 (29.5%) and by both in 31/166 (16.7%). UF is performed only once in 54/166 centers (32.5%), more than once (usually twice) in 42/166 (25.3%) and more than once only in particular cases in 70/166 (42.2%). In most centers (91/166, 54.8%) the minimum VV considered suitable for the UF interpretation is 150mL; other common lower limits are 100mL (26/166, 15.7%) and 200mL (23/166, 13.8%). Regarding the maximum VV, the respondents were mainly divided between 500mL (52/145, 35.8%) and any volume (57/145, 39.3%). Regarding the interpretation of UF, nomograms are not used by 117/166 respondents (70.5%) because they are considered useless (30, 25.6%) or because clinicians prefer to base the judgement on their own experience (60/117, 51.3%). Of the 49/166 centers (29.5%) using UF nomograms for interpretation of the results of UF, 21/49 (42.9%) do so in every case, 28/49 (57.1%) only under particular circumstances. The UF nomogram most commonly used is the Liverpool nomogram (21, 42.9%), with the Siroky nomogram being used considerably less frequently (7, 14.2%). Table I shows a summary of data concerning the parameters used for UF interpretation. When the use of a cut-off for defining an abnormal Qmax was indicated (83 centers), this varied between 8 and 30mL/sec: 15mL/sec in 46.9%, 10mL/sec in 22.9% and 12mL/sec in 14.4%.

Parameters	VV	Qmax	Qave	PVR	Shape	Gender	Age
Centers (n=161)	117 72.6%	124 77.0%	37 22.9%	83 51.5%	117 72.6%	74 45.9%	76 47.2%

Table I: parameters considered for UF interpretation.

In 81.9% of the centers (136/166) PVR is always measured, by means of ultrasounds (conventional or with a bladder-scan) more commonly than with a catheter (63.75% vs 36.25%). In reading Qmax, 112/155 (72.3%) respondents stated that they use the corrected value directly on the flow curve, while 43/155 of them (27.7%) consider the number automatically generated by the flowmeter.

### Conclusions

This international survey showed that there is only a partial concordance in the methods of performing and interpreting UF. In fact, there is a high concordance in the minimum VV considered suitable for the UF interpretation, the measurement of PVR and the evaluation of Qmax as the corrected value read on the flow curve, while there is a low concordance on two important aspects: the number of flows performed for each evaluation and the value of Qmax cut-off. Moreover, in more than 30% of the centers only 1 UF is performed, although it has

been recently recommended to achieve at least 2 UFs (1) and to always measure and provide the PVR when reporting UF results (2), which is not the case in 18% of the sample. The parameter most commonly considered in the interpretation of UF is the Qmax, but the value of its cut-off is rather variable among the centers, which can lead to divergent results. Most of the clinicians seem not to employ objective tools for UF interpretation, such as nomograms but are rather guided by personal experience.

In conclusion, the findings of this survey suggest a need for a more thorough standardization of UF in order to achieve a more comparable evaluation of this apparently simple examination.

### **References**

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