

How to Assess Maximum Voided Volume: Comparison Of Maximum Voided Volume Obtained During Uroflow To Maximum Voided Volume Obtained By Frequency Volume Chart

Blaivas J¹, Hirsch Z M²

1. Weil Cornell Medical College of Cornell University, 2. Institute for Bladder and Prostate Research

Hypothesis/ Aims of Study

- Urinary flow rate (Q) is one the most important yardsticks by which lower urinary tract symptoms (LUTS) are assessed; it has been well documented that Qmax is dependent upon voided volume (VV).
- Maximum voided volume (MVV) is another useful metric of LUTS.
- Most urologists ask their patients to wait to void until they feel a full bladder prior to obtaining Q; so, by proxy, measurement of uroflow voided volume (QVV) has been used as a measure of MVV.
- The aim of this study is to compare QVV to MVV obtained by a 24-hour bladder diary (24H BD).

Study Design/ Materials and Methods

- Retrospective study of patients evaluated for LUTS who completed the Lower Urinary Tract Symptoms Score, Q, & 24H BD on a mobile app (figure 1), website, or paper.
- The MVV was collected from the 24H BD.
- A contemporaneous QVV was obtained after the patient was told to drink until his/her bladder felt full.
- Bladder diaries with no contemporaneous uroflow were excluded.
- Spearman's correlation was calculated between the QVV and 24hMVV data.

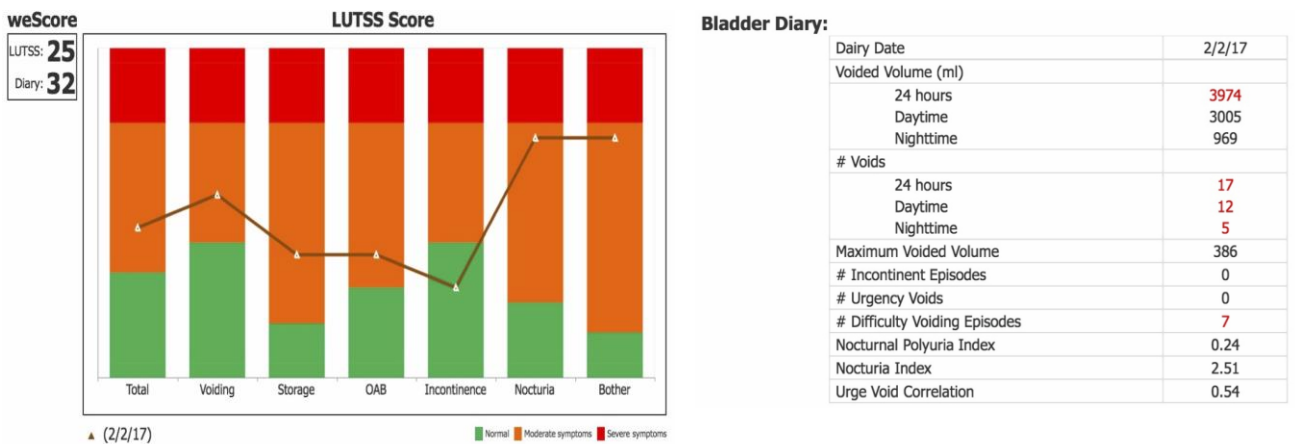
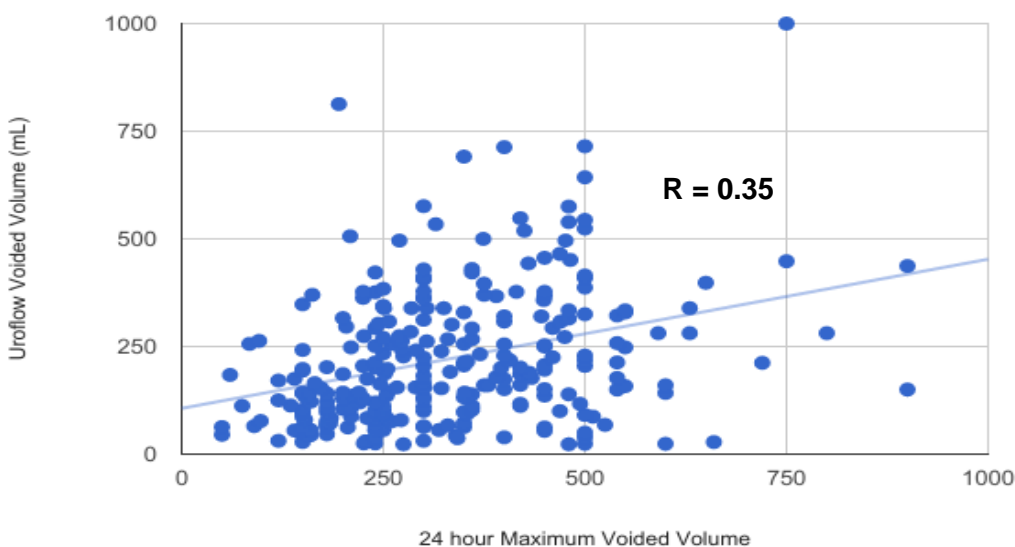


Figure 1. The total LUTSS and 5 sub-scores are color-coded to represent normal (green), moderate (orange), and severe (red) symptoms. The Bladder diary summary shows results of the 24-hour bladder diary with abnormalities in red.

Results

QVV vs Bladder Diary 24hMVV



- 643 patients, ages 20-94 (average 57, SD 17) completed bladder diaries.
- 272 patients, 67 men and 205 women have contemporaneous uroflow data inputted to date.
- MVV was, on average, about 110 mL > QVV.

Figure 1. Scatterplot of bladder diary 24hMVV vs. QVV (n=272)

Interpretation of Results/ Concluding Message

- There was only a weak correlation between QVV and 24hMVV in both sexes.
- MVV is best assessed by comparing both uroflow and frequency volume chart data.
- Relying on only one of these measures can underestimate MVV by as much as 500% or more in women and 100% or more in men.
- On average, the MVV obtained by frequency volume chart was over 100 mL greater than that obtained by uroflow data.

Disclosure Statement

Dr. Blaivas is co-founder of Symptelligence Medical Informatics, LLC.